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U.S. Department of Transportation

Rural Public Transportation Performance Evaluation Guide

DEPARTMENT OF TRANSPORTATION
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Transportation

DEPARTMENT OF TRANSPORTATION
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Rural Public Transportation Performance Evaluation Guide

Final Report
November 1982

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I

Introduction, Purpose and Procedures

INTRODUCTION AND PURPOSE

This manual is intended to be used by managers of rural and small urban transportation systems as a guide for monitoring and evaluating the performance of their systems. The monitoring and evaluation method involves periodic analysis of a variety of operating and financial performance indicators. These "general" and "supplemental" indicators do not require any new or unusual data collection, and should be readily obtainable by any transportation system. Several "other" indicators are also provided in case more detailed analysis beyond the results of the recommended "general" and "supplemental" indicators is desired.

While the primary intent of this manual is for management's internal use, it can also provide facts and data which may help local governing bodies make decisions on policy and future direction. Also, critical local decisions (such as whether to maintain, modify or terminate funding for particular routes or service areas) can be supported by the results of a performance analysis. For those managers who already conduct performance evaluations, the manual may help to better organize the evaluation or expand its scope.

The manual consists of three chapters and two appendices. Chapter I explains the intent of the manual and the sequence of procedures that

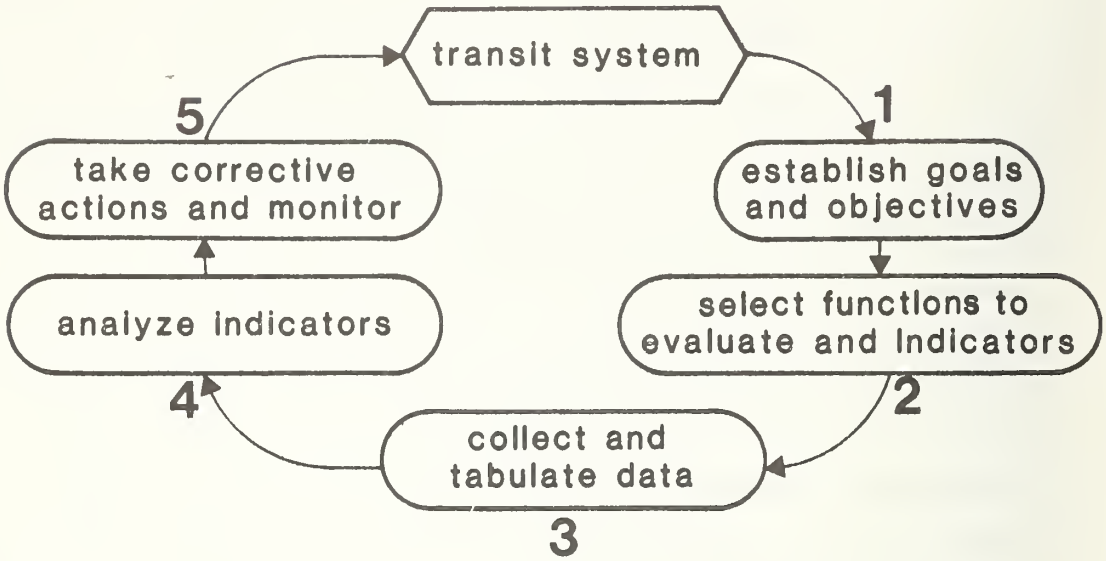
should be followed in conducting performance evaluations. Chapter II provides the measures to be used by functional category, data definitions, implications of negative results and suggested corrective actions to be taken. Chapter III provides an exemplary application of the recommended evaluation procedures.

Appendix A is a glossary of definitions for all categories of data used. The reason for this repetition is to allow each category of evaluation to be used separately. Appendix B contains comparative performance data for numerous systems in Pennsylvania and other states, to be used by managers at their discretion.

PROCEDURES

Monitoring and evaluation of performance should consist of five activities: (1) establishing goals and objectives; (2) selecting functions to evaluate and indicators to use; (3) collecting data and calculating indicators; (4) analyzing and interpreting performance indicators; and (5) taking corrective actions and monitoring the results. These activities make up a singular process, as shown in the following diagram, which should be ongoing for two reasons. First, continuous evaluation of a system is necessary for timely detection and correction of problems. Second, corrective actions themselves must be monitored and evaluated to determine whether they are, in fact, effective.

PERFORMANCE EVALUATION STEPS



1. ESTABLISH GOALS AND OBJECTIVES - Transportation systems should have adopted goals and objectives which can be used as benchmarks for comparison to the results of a performance evaluation. Without written goals and objectives, evaluation results will be more difficult to apply and to base decisions on.

Quantifiable objectives will be much more useful than generalities. For example, an objective to: "maintain at least a 35 percent ratio of total revenue to total expenses" will be much more useful than the general goal to: "achieve the highest ratio of passenger revenue to total expenses possible." Quantifiable objectives can provide the basis for evaluation. If a transportation organization does not have such objectives, it would be advisable to formulate them before a thorough performance evaluation is conducted.

Not all goals and objectives are quantifiable, but they should at least be able to be evaluated from a simple goals-achievement standpoint. For example, the system should have goals and objectives for personnel, planning, marketing, public image and business community involvement. Goals and objectives for these areas do not lend themselves to quantitative analysis, as do those related to revenues, cost, routes and service operations. An analysis of the goals' status and achievement can expand the scope of performance analysis beyond the recommended quantitative measures.

Listed below is a sample set of transportation system goals and objectives. They are organized both by functional area and according to whether or not they are generally amenable to quantitative or qualitative evaluation.

SAMPLE TRANSPORTATION SYSTEM GOALS AND OBJECTIVES
(APPLICABLE TO QUANTITATIVE PERFORMANCE EVALUATION)

Financial

- Recover at least 40 percent of public service operating expense from farebox revenue.
- Recover at least 60 percent of all system operating costs from farebox, contract service revenues and advertising fees.
- Maintain local tax base financial support at a maximum of 20 percent of the system's total operating expense.
- Contain system operating expense to a maximum increase of 10 percent per year.
- Increase the ratio of passenger revenue to total operating expense by at least 3 percent per year.

- Keep changes in the passenger fare system equivalent to increases in the area's consumer price index.

- Administrative expenses for the system should not exceed 20 percent of the system's total operating expenses.

- The operating cost per vehicle mile and per vehicle hour should not exceed the average cost for other similar-size systems in Pennsylvania.

- Total subsidy per passenger should not increase by more than 8 percent per year.

Ridership

- The total number of passengers carried each year should exceed the number for the previous year even if the size of the system does not increase. If system cutbacks occur, ridership for retained service segments should still increase each year.

- A minimum of 30 percent and a maximum of 60 percent of the total annual passengers should be persons 60 years or older.

- At least 50 percent of all passengers should be fare-paying passengers.

- The entire system should maintain a minimum of five (5.0) passengers per vehicle hour.

- Expand special routes for non-peak service to major shopping locations.

- All fixed route services should maintain a minimum of one (1.0) passenger per vehicle mile.

- Maintain headways at a schedule that will minimize recurring overloads.

Service Quality

- At least 90 percent of all stops should be on time (0 minutes early to 5 minutes late).

- There should be no more than three complaints per individual driver per year.

- All bus stops should have clearly marked bus stop signs and no-parking signs.

- There should be a minimum of 8,000 miles between road calls per individual vehicle.

- Match all routes with vehicles of adequate size, design and accessibility features, depending upon route demand and characteristics.

- All buses in daily service should be thoroughly cleaned at least once a week on the exterior and daily on the interior.

Level of Service

- Urban area fixed route service should maintain an average speed of between 12 and 15 miles per hour (ratio of revenue miles to revenue hours).

- Rural area demand responsive service should maintain an average speed of at least 25 miles per hour and intra-urban area demand responsive service an average of 15 miles per hour (ratio of revenue miles to revenue hours).

- The system's vehicle hours per year should not be increased by more than 10 percent over the amount for the previous year.

Safety

- The entire system should have no more than one avoidable revenue vehicle accident per two years.

- The entire system should have no more than two non-vehicle accidents per year.

- The system should average no less than 18,000 vehicle miles per revenue vehicle accident for 12 months

(APPLICABLE TO QUALITATIVE PERFORMANCE EVALUATION)

Public Relations and Support

- Attempt to change the perceived importance of the automobile as the major transportation mode.

- Stimulate interest, acceptance and understanding of public transportation by taking a progressive and interactive role in the community.

- Inform the public of the environmental and economic benefits of public transportation.

- Periodically present system goals, plans and accomplishments to local elected officials.

- Increase political support for the system by increasing management's and board members' involvement with political and governmental groups.

- Assist local businesses in developing and providing for public transportation access to shopping and employment centers.

- Design and implement a rider information system (on and off routes) and a targeted promotion plan.

- Maintain constant surveillance of existing and potential route structures for optimum social, financial and operating benefits.

Passenger Amenities

- Improve bus stop shelters and benches.

- Install passenger information displays at key locations.

Personnel

- Build a positive community, service, and organization spirit and attitude.

- Ensure continuous communications among operations, supervisory, management and administrative personnel.

- Implement driver and management training policies and programs.

- Ensure that all personnel present an attractive appearance and a professional and courteous attitude to the general public.

- The number of annual sick days per employee should not exceed the average for the past three years.

Management

- Provide regular financial and operating performance statistics and reviews to the governing board.

- Maintain a dedicated and competent staff that presents a positive image and attitude to the general public.
- Increase the level of public support for the system.
- Maintain and update system policies and development plan.
- Secure the system's position as the lead and central coordinating entity for all transportation needs in the service area.
- The ratio of administrative staff to total staff should not exceed 20 percent.

The financial, ridership, service quality, level of service, and safety goals and objectives can be directly measured by the performance indicators provided in this manual. Those listed under the public relations and support, passenger amenities, personnel, and management categories cannot be directly measured by the performance indicators, but are still important for a system to examine to be able to judge its progress in non-quantitative but necessary functions. In many cases the evaluation of such functions can provide added insight into problems that may have been signaled but not totally explained by the quantitative performance measures.

When written objectives exist, the results of performance evaluations can be compared directly to those benchmarks. In many instances, the comparison of the performance evaluation results with objectives will enable a quicker determination of whether corrective action is needed or whether the objectives are unrealistic.

2. **SELECT FUNCTIONS TO EVALUATE AND INDICATORS TO USE** - The manager should determine whether the entire system, or only certain functions, need to be evaluated, and at what level of detail. While all aspects of a transportation system are interrelated, it is necessary to distinguish between categories of functions to be able to focus and manage the performance evaluation. This also allows the scope and purpose of the performance evaluation to be defined as broadly or narrowly as desired.

The recommended performance indicators herein are divided into two major types, financial and non-financial. Each of these contains several functional categories as follows:

Financial Indicators

1. Expense
   - . General
   - . Supplemental
   - . Other

2. Revenue
   - . General
   - . Supplemental

3. Subsidy

Non-Financial Indicators

4. Ridership
   - . General
   - . Supplemental

5. Service Quality
   - . General
   - . Supplemental

6. Level of Service

7. Safety
   . General
   . Supplemental

As shown, there are seven functional categories of indicators. The three financial categories have the largest variety of indicators and will provide an assessment of a system's cost effectiveness and cost efficiency. Several measures of production efficiency are also included, since they directly impact expenses and revenues. The non-financial categories provide assessments of a system's consumption effectiveness and service quality. A few production efficiency-type indicators are also included which relate more directly to service quality and level than to financial impacts.

Most of the seven categories include a further breakdown of indicators into "general" or "supplemental." The expense category also has a large number of "other" indicators. The categories of subsidy and level of service do not have any breakdowns by "general" or "supplemental" since they have such a small number of indicators that are generally similar in their analytic value.

General indicators are those which have the broadest level of measurement and can be used for the most general time-series comparisons or comparisons to other operations. General indicators are also made up

of whole values, such as total miles rather than revenue miles or total expenses rather than administrative expenses.

Supplemental indicators are recommended when more detailed analysis is needed. They can be used system-wide for individual routes or different subcomponents of service. Although they can be used for comparison to other systems, data comparability may be difficult to achieve. Usually supplemental indicators are best suited for internal reviews through time-series analysis.

The expense category contains 26 indicators classified as "other" (see Page 24). These are detailed indicators that may be useful for analysis beyond the recommended general and supplemental indicators. They would be readily applicable to a time-series comparison, but it would probably be quite difficult to achieve data comparability among these "other" indicators with other systems. They should be considered diagnostic tools for in-depth analysis of system components.

3. **COLLECT DATA AND CALCULATE INDICATORS** - After the scope of the evaluation has been decided and specific indicators selected, the data elements needed for each indicator must be collected and tabulations made. As can be seen in the following chapter, most indicators are expressed as a ratio (one number divided by another). Those few that are not are simple tabulations of one item (e.g., vehicle miles per

year, revenue vehicle accidents for each route, etc.). Thus, the calculations required to derive the indicators are quite simple.

The data required for calculating the general and supplemental indicators is data that should be readily available and used regularly by any system in Pennsylvania. All data elements required by the general and supplemental indicators are defined at the first point the indicators are introduced in Chapter II. There is also a glossary with all definitions at the end of the manual.

Generally, the data used to calculate the performance indicators should cover 12 months of operation. Due to variations in cash flow and the timing of transactions, performance data can vary tremendously from month to month. For example, the annual fleet insurance premium for a system may be paid in one month and, if only that one month is analyzed, operating expenses would seem unusually high. Similar effects occur when any major transaction takes place, whether it's a cash payout or a receivable. Thus, since budgets are annualized, the most accurate performance evaluation should also cover 12 months.

It is still important, however, to monitor statistics throughout the year on a periodic basis. Quarterly reviews can also coincide with the quarterly reportings made to PaDOT to meet grant requirements. This makes it possible for the manager to predict how the system is moving towards its 12-month or year-end objectives. In analyzing periodic

data, the manager must be alert to detect significant financial, ridership or service fluctuations resulting from the timing of major financial transactions, unusual weather conditions or major shifts in the economy.

Conducting quarterly or periodic reviews of performance data helps managers to keep abreast of potential problems and allows corrective actions to be taken before a problem becomes severe. This would avoid some duplication, since much of the same data required for PaDOT's grant reports is also needed for the recommended performance indicators.

Chapter III contains a case study performance evaluation which traces all steps that should be followed, including data collection and analysis.

4. ANALYZE AND INTERPRET PERFORMANCE INDICATORS - After the selected indicators have been calculated, an analysis should be made to determine whether performance has been satisfactory or not. This can be done in two ways. First, the results can be compared to the same results for another time period (time-series comparison), e.g., compare 1980/81 to 1981/82, or compare one quarter to the preceding quarter or to the same quarter for the previous year. All analyses should also be related back to the system's goals and objectives for the current year.

Second, the results can be compared to industry norms. While performance norms, or standard values, are not readily available on a statewide or national basis, sufficient data can be obtained from other comparable systems. Data have been collected from many rural and small urban systems in several states, including Pennsylvania, and summarized in Appendix B of this manual. The data are presented by state, with a brief profile of the types of systems so that the user can decide which ones are most appropriate for comparison.

Caution should be taken in comparative analyses because it is very difficult to be sure that any two systems are truly comparable; only one or a few operational or environmental dissimilarities can make systems incomparable. There needs to be some degree of certainty that factors such as size of operation, age of operation, service area population density, geographic conditions and type of operation are similar in order for a comparative analysis to be valid. Also, for financial indicators, it is important that the age of data from other systems be comparable. If it is not, the effects of inflation and other economic change may distort comparisons.

When suspected low values occur for the general indicators, more detailed analyses should be made by using the related supplemental indicators to investigate specific operational or financial subcomponents. This step may help explain why the general indicators are low or unfavorable and narrow the possible causes or problem areas. Further

analysis may also show that suspected subcomponents are not the problem, which may shift the investigation to another category.

In either case, this fourth step should begin to suggest corrective actions that might be needed when unfavorable trends result. When acceptable values occur, the evaluation cycle is completed. For unfavorable results, the manager should proceed with the fifth step of implementing corrective action.

5. TAKE CORRECTIVE ACTIONS AND MONITOR - Once the performance data has been evaluated, the manager must decide what, if any, corrective actions are needed; carry out the actions; monitor their results; and make adjustments, as needed. This is the most challenging and creative part of the evaluation cycle.

To aid managers in deciding what kinds of corrective actions may be needed, each of the functional categories in Chapter II contains a list of strategies, actions or changes that might be effective. After corrective actions are taken, monitoring and evaluation of monthly and quarterly data is useful to help determine whether or not the corrective actions are working. These periodic reviews can help managers decide where modifications or a shift in emphasis for remedying poor evaluation results may be needed. At this point, the first cycle of evaluation--as depicted at the beginning of the chapter--is completed.

II

Evaluation Indicators, Interpretation and Corrective Actions

INTRODUCTION

This chapter specifies the performance indicators, gives data definitions, explains the implications of unsatisfactory or negative results, and suggests alternative corrective actions. Negative results would either show a less favorable result compared to the same calculation for the previous year or time period, or else in comparison to the same data for other comparable systems. The indicators are divided into two sections, financial and non-financial.

Each of the sections is further organized by seven functional categories including: (1) expense; (2) revenue; (3) subsidy; (4) ridership; (5) service quality; (6) level of service; and (7) safety. As noted in Chapter I, managers need to first determine which functional areas need to be evaluated and, thus, which indicators from this chapter need to be used. If a total system evaluation has not been done before, the analyses methods from the entire manual should be used, at least the first time. Data definitions are given only the first place they appear in this chapter, but are also repeated in alphabetic order in Appendix A.

FINANCIAL PERFORMANCE

EXPENSE

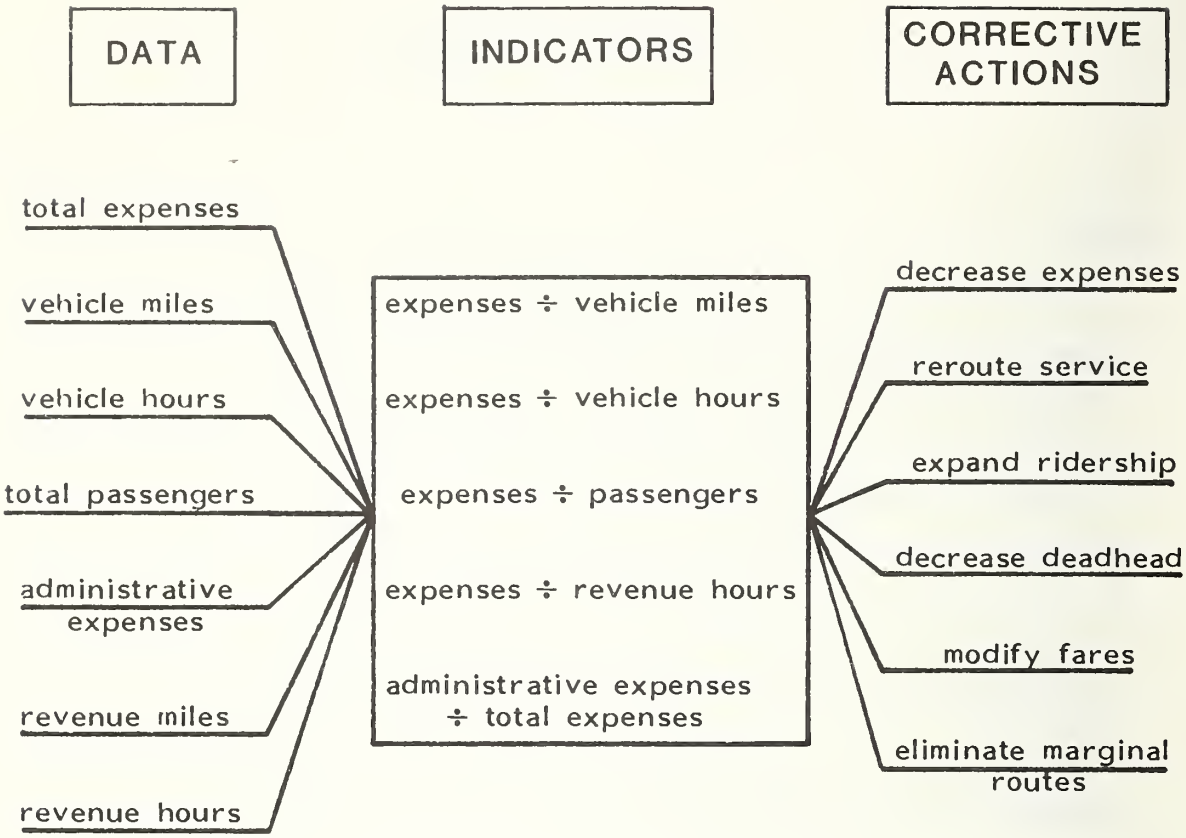
General Indicators

1. Total expenses ÷ total vehicle miles
2. Total expenses ÷ total vehicle hours
3. Total expenses ÷ total passengers

Purpose and Use - General expense indicators #1 and #2 measure cost efficiency, or how economically a system provides service. The data used for each indicator is the total operating expense (operating and administrative expense) for the system. The denominator of each indicator is a measure of service output for the entire system: total vehicle miles and total vehicle hours. The results are useful in determining if changes are needed in total service cost, route lengths, areas or segments of service, or time span of service.

General indicator #3 is a measure of cost effectiveness, or the extent to which a system is accomplishing its major purpose of moving people with specified resources. Here, again, the data used is total operating expense for the system. The denominator is a count of the total passengers. The results can be useful in determining whether changes are needed in the number of passengers, operating costs, or extent and location of service offered.

EXPENSE


DATA
INDICATORS
CORRECTIVE ACTIONS
total expenses
vehicle miles
vehicle hours
total passengers
administrative expenses
revenue miles
revenue hours
expenses ÷ vehicle miles
expenses ÷ vehicle hours
expenses ÷ passengers
expenses ÷ revenue hours
administrative expenses ÷ total expenses
decrease expenses
reroute service
expand ridership
decrease deadhead
modify fares
eliminate marginal routes

Data Required and Definitions - Indicators #1, #2 and #3 will require system data for total expenses, total vehicle miles, total vehicle hours and total passengers. All data must be from the same time period to ensure comparability. The following data definitions are also contained in Appendix A, along with all other data definitions.

- Total expenses = total cost of service attributable to administrative and operating expenses (excludes capital purchase expenses).
- Vehicle miles = total mileage traveled by revenue vehicles for all revenue service, including deadhead mileage.
- Vehicle hours = total vehicle hours used in providing revenue service, including deadhead time.
- Total passengers = count of boardings for a given time or distance of service, excluding transfers.

Supplemental Indicators

4. Total expenses ÷ revenue miles
5. Total expenses ÷ revenue hours
6. Administrative expenses ÷ total expenses

Purpose and Use - These three supplemental expense indicators also measure cost efficiency--the economy of a system in providing service. Results from these indicators are useful as a more detailed assessment of cost efficiency. If the general expense indicators show acceptable values, the manager may still want to apply the supplemental indicators to be sure that the three subcategories of expense are also acceptable and not in need of improvement.

When the general indicators show unacceptable values, these supplemental indicators may help distinguish between the effects of total vehicle miles or hours versus revenue vehicle miles or hours, i.e., whether deadhead travel or revenue service appears to be problematic. Indicator #6 would help to show if administratives costs are unusually high or whether the problem is with operational expenses. Similar to the general indicators, the supplemental results could indicate a need for changes in service costs, route lengths, segments or areas of service, or time span of service.

Data Required and Definitions - Data needed for the supplemental expense indicators includes total expense, administrative expense, revenue miles and revenue hours. All data must be taken from the same time period to ensure comparability. Total expense data is defined in the preceding general expense indicator section and in Appendix A. New data items are defined as follows:

- Administrative expenses = those expense items attributable to administrative functions (excluding operating and capital purchase expenses), including the following:

    1. administrative staff wages and fringe benefits
    2. dues and subscriptions
    3. travel and meetings
    4. donations (by the operating agency)
    5. fines and penalties
    6. bad debts
    7. advertising, media
    8. premiums for public liability and property damage
    9. administrative facility leases
    10. management service fees

11. professional and technical studies
12. custodial services
13. temporary administrative help
14. administrative materials, supplies
15. administrative facility utilities
16. payout or provision for uninsured public liability and property damage
17. Federal income tax
18. State income tax
19. administrative facility property tax
20. depreciation of administrative equipment and facilities
21. legal fees
22. accounting fees
23. sundry office expenses
24. books and publications
25. telephone rental (excluding dispatching phones)

- Revenue Miles = total vehicle miles traveled in providing passenger transportation, excluding deadhead mileage. Fixed Route deadhead is mileage driven from the garage to the first bus stop on the route and from the last stop of the route back to the garage. Demand responsive deadhead is mileage driven from the last passenger's destination to the vehicle's stand, garage or headquarters.

- Revenue Hours = total vehicle hours used in providing passenger transportation, excluding deadhead time.

Other Indicators

The following list includes a variety of other expense-related indicators which may be of interest to managers desiring in-depth analysis of detailed aspects or segments of a transportation system. They should not replace the general and supplemental indicators, but only add to the analysis, as needed and feasible. Their usage will require the

collection and analysis of data beyond that which is regularly collected and readily available from most systems. Comparative data for these indices is extremely difficult to find. Time-series comparisons of internal data are the most reasonable and feasible method of analyzing for these indicators.

7. Total expenses ÷ number of employees
8. Overtime pay ÷ total pay
9. Drivers' wage and fringe ÷ total vehicle miles
10. Drivers' wage and fringe ÷ total vehicle hours
11. Drivers' wage and fringe ÷ total expenses
12. Maintenance cost ÷ total vehicle hours
13. Maintenance cost ÷ total vehicle miles
14. Maintenance cost ÷ total expense
15. Dispatch cost ÷ total vehicle hours
16. Dispatch cost ÷ total vehicle miles
17. Dispatch cost ÷ total expenses
18. Fuel cost ÷ vehicle miles
19. Fuel cost ÷ total expenses
20. Marketing cost ÷ total expenses
21. Administrative cost ÷ total vehicle miles
22. Administrative cost ÷ total vehicle hours

(The following indices do not measure expense, but, rather, the use of resources that incur expense.)

23. Maintenance hours ÷ number of revenue vehicles
24. Number of vehicles ÷ mechanics
25. Revenue miles ÷ vehicle miles
26. Vehicle miles ÷ gallons of fuel
27. Administrative staff ÷ total staff
28. Heating fuel consumed ÷ area of fixed facility
29. Vehicle miles ÷ quarts of oil
30. Vehicle miles ÷ employees
31. Vehicle hours ÷ pay hours
32. Vehicle hours ÷ number of peak period vehicles

Interpretation

Expense performance indicators, unlike non-financial indicators, are quite sensitive to overall changes in the economy, particularly

inflation. Therefore, it is important that, if external comparisons are made, the data must either be from the same time period or able to be adjusted to ensure comparability. Also, for internal time-series comparisons of current-year data and previous-year data, users need to be cognizant of external economic and inflationary impacts beyond the control of the transportation system.

Unacceptable values for all expense indicators would show that either the unit of service (vehicle miles or hours), cost per passenger, or administrative expenses are higher than should be expected. The three ways to make such a determination are: (1) by making a time-series comparison; (2) by comparing results to quantified objectives; or (3) by making a comparison to indicators for other comparable systems.

The latter method should be used with caution, since comparability between systems is difficult to ensure. As an aid to external comparisons, Appendix B contains indicators for numerous small urban and rural systems in Pennsylvania and other states. The expense indicators in the Appendix, like any other financial data, are from one time period and thus could quickly become obsolete. Interpretations of financial data should always use updated or adjusted comparative data to help ensure comparability.

Corrective Actions

Actions to improve expense indicators could be either directly or indirectly focused on expenses. Actions taken directly on expense could be a reduction or constraining of certain budget items (e.g., any expense category such as administrative costs, operations staff payroll, contracted rates with vendors, etc.). This type of action would be a financial management decision.

Indirect, or operations management, decisions would focus on modifying administrative and/or operating practices and status. Unacceptable or suspicious indicators may, for example, lead to the conclusion that the design or scheduling of the system's routes is insufficient and should be modified. This may suggest a need for reductions of route segments, rerouting, or rescheduling. Supplemental indicators for revenue mileage and hours showing large differences between total mileage and hour costs could indicate that deadheading is excessive and that rerouting is necessary.

In reviewing the various items of operation and administration that may need corrective action, no item of expense should escape scrutiny. As suggested by the list of 26 "other" expense indicators (see Page 24), all aspects of a transportation system should be considered as potential areas for corrective action.

A list, found on Page 37, summarizes the kinds of specific corrective actions that should be considered for expense problems and other financial problems.

REVENUE

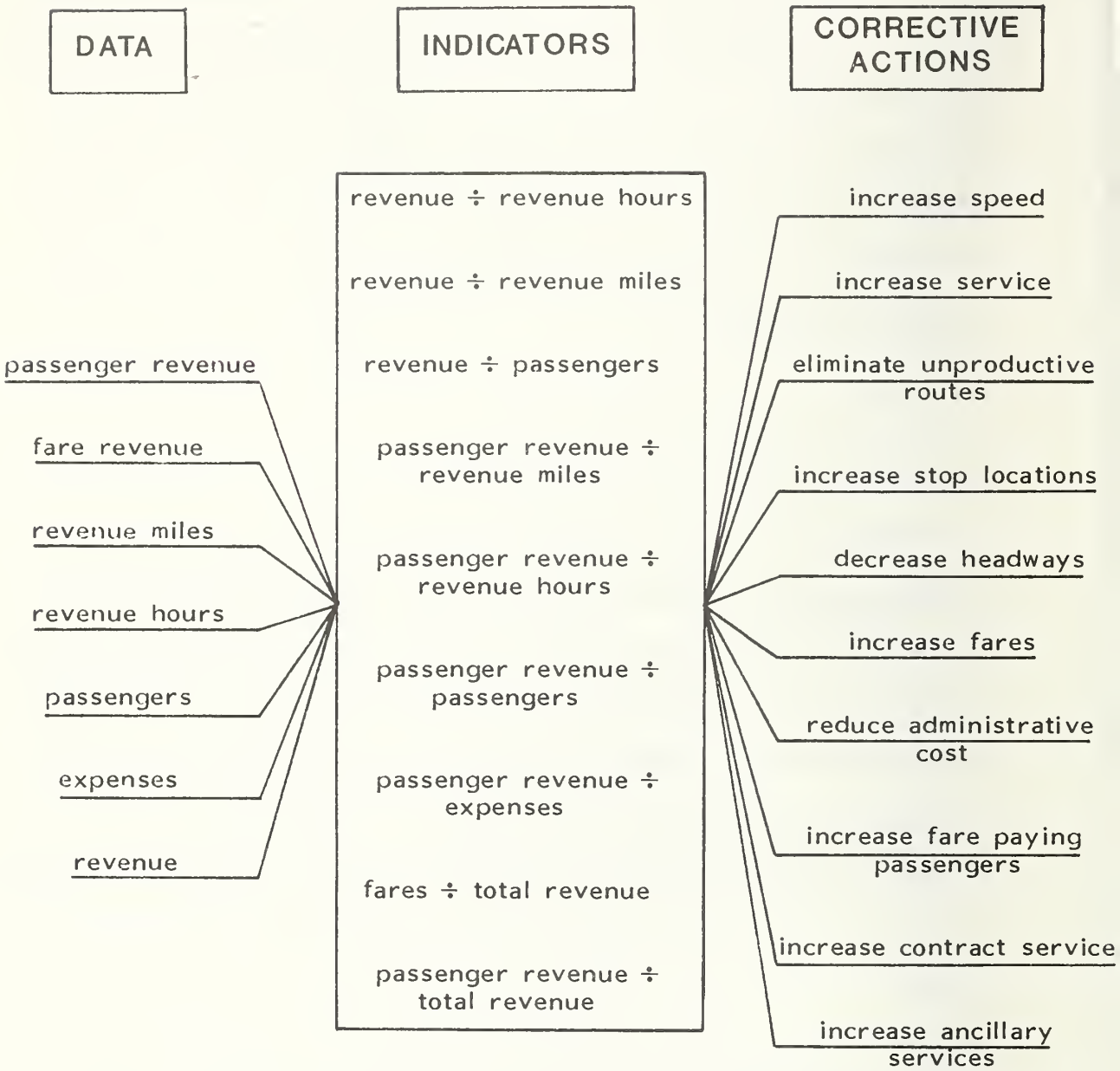
General Indicators

33. Total revenue ÷ revenue hours
34. Total revenue ÷ revenue miles
35. Total revenue ÷ total passengers

Purpose and Use - The three general revenue indicators measure cost effectiveness--how well a system is accomplishing its primary objective of moving people with specified resources. In doing so, they compare effects to inputs or outputs (e.g., revenue generated to vehicle hours expended or passengers). These indicators can signal a need for increasing system revenue through a fare increase or nonpassenger revenue increase, such as advertising, contract service or special service grants.

On the other hand, the indicators may show that the fare system is adequate but that ridership is too low throughout the system or in certain segments or time periods. In this regard, the indicators are of value for system-wide analysis as well as for subareas or segments. This

REVENUE


DATA
INDICATORS
CORRECTIVE ACTIONS
passenger revenue
fare revenue
revenue miles
revenue hours
passengers
expenses
revenue
revenue ÷ revenue hours
revenue ÷ revenue miles
revenue ÷ passengers
passenger revenue ÷ revenue miles
passenger revenue ÷ revenue hours
passenger revenue ÷ passengers
passenger revenue ÷ expenses
fares ÷ total revenue
passenger revenue ÷ total revenue
increase speed
increase service
eliminate unproductive routes
increase stop locations
decrease headways
increase fares
reduce administrative cost
increase fare paying passengers
increase contract service
increase ancillary services

level of analysis requires the use of the supplemental indicators in addition to the general indicators.

Data Required and Definitions - Data are needed on total system revenue, revenue hours, revenue miles and total passengers in order to calculate the three indicators. All data must be taken from the same time period to ensure comparability. Revenue hours, revenue miles and total passengers were defined in the preceding subsection on expense indicators and in the Appendix A glossary. Total revenue is as follows:

- Total revenue = total fare-paying passenger revenue, passenger revenue, and non-passenger revenue collected, excluding Federal, State and local operating assistance grants and any other Federal grants.

Supplemental Indicators

36. Passenger revenue ÷ revenue miles
37. Passenger revenue ÷ revenue hours
38. Passenger revenue ÷ total passengers
39. Passenger revenue ÷ total expenses
40. Total fare-paying passenger revenue ÷ total revenue
41. Passenger revenue ÷ total revenue

Purpose and Use - The six revenue supplemental indicators also measure cost effectiveness by comparing effects (passenger revenue, etc.) to inputs or outputs (revenue miles, total passengers, etc.). These indicators, like the general indicators, can signal a need for increasing system revenues or decreasing service output. They provide more

detailed analyses, however, that can help pinpoint whether problems are with passenger revenue versus total revenues, the fare system, or the size and expense of revenue service.

These indicators must be used in conjunction with the general indicators to make distinctions between the above problem areas. They can be useful both for system-wide analysis and for examining subareas and/or segments of the system.

Data Required and Definitions - Data needed for calculating the six supplemental indicators include: passenger revenue, total fa re-paying passenger revenue, revenue miles, revenue hours, total passengers, total expenses, and total revenue. All data must be taken from the same time period to ensure comparability. All except the following data items have been defined previously and are also contained in the Appendix A glossary.

- Fare-Paying passenger revenue = total revenue collected from fares and transfers, passes with regular fare value and any partial fares paid through the farebox (revenue attributable to the Senior Citizens Reduced Fare and Free Transit Programs are excluded).
- Passenger revenue = total fare-paying passenger revenue plus revenue attributable to the Senior Citizens Reduced Fare and Free Transit Programs.

Interpretation

Revenue indicators are subject to external effects of the economy but are usually somewhat slower to react than expenses, which change more frequently from inflationary pressures. Thus, comparative analyses, whether data from other systems or internal time series comparisons are used, must be either from the same time period or adjusted to ensure comparability.

Unsatisfactory values for revenue indicators would show that total system or passenger revenue is insufficient compared to either the amount of service provided or the number of riders. As noted earlier, the combined results from both the general and supplemental indicators can help isolate problems from fare systems being too low, non-passenger revenue or contract service revenue being too low, or ridership being too low.

Appendix B contains a compilation of indicators from numerous systems in Pennsylvania and other states that may be useful to managers desiring external comparisons. As with any financial data, the user should be sure that the external data used are comparable or can be updated or adjusted.

Corrective Actions

Actions concerned with improving revenue indicators could focus either directly on revenue generation or on operating characteristics. Direct actions on revenues could focus on increasing fares and/or non-passenger revenue. Actions to alter operating characteristics could include decreasing revenue miles or hours, or any other expense category.

Cases where total revenue per passenger is substantially above passenger revenue per passenger may indicate a heavier reliance on subsidies and contracts than on fares, which may or may not be problematic. Such results would remind managers and policymakers of the system's reliance on fares versus contracts, special service or non-passenger revenues. This could help ensure conscious decision-making and planning for the system's long-term revenue sources.

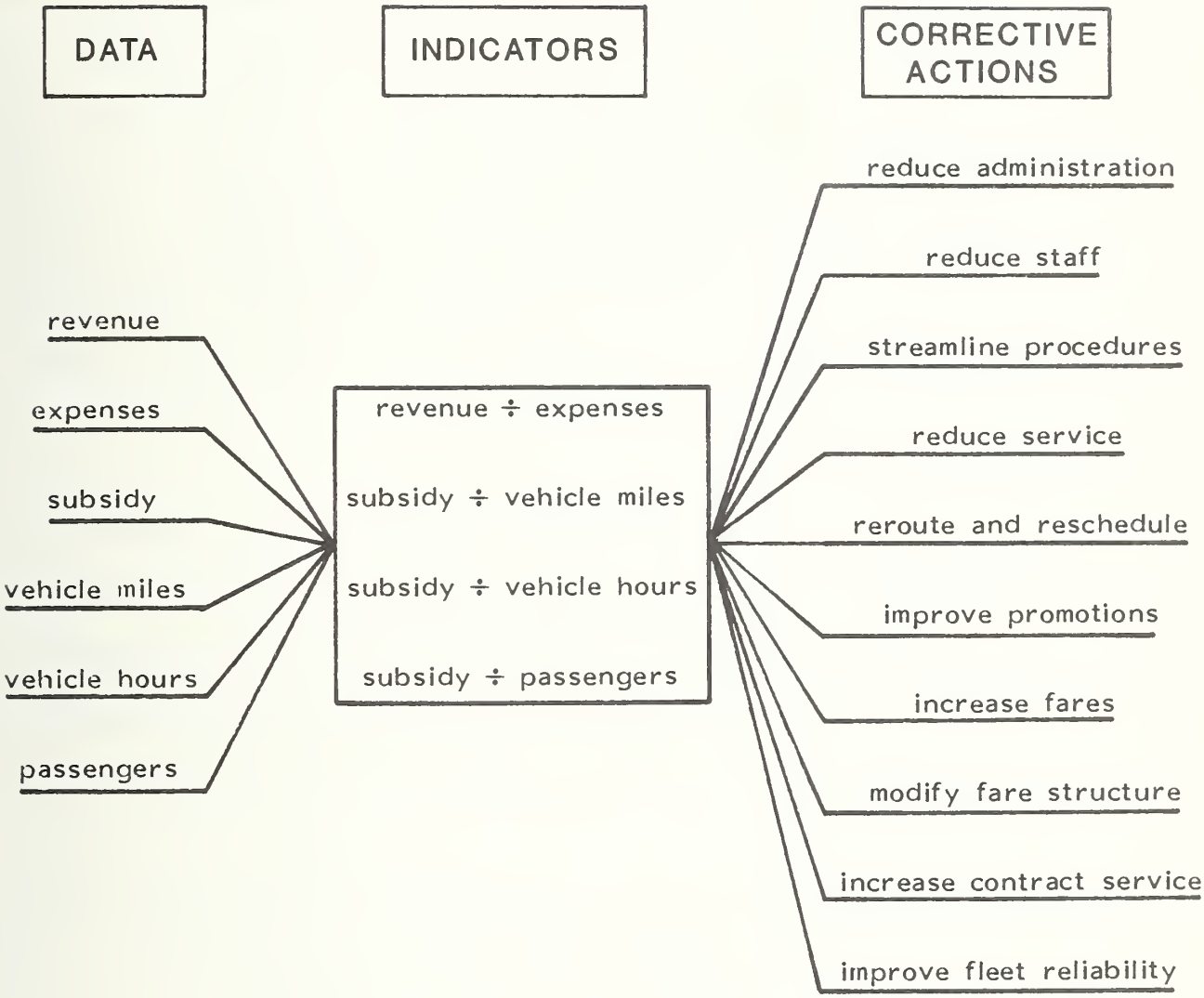
A listing on Page 37 summarizes the kinds of specific corrective actions that should be considered for revenue problems and other financial-related problems.

SUBSIDY

General Indicators

42. Total revenue ÷ total expenses
43. Subsidy ÷ vehicle miles
44. Subsidy ÷ vehicle hours
45. Subsidy ÷ passengers

SUBSIDY


DATA
INDICATORS
CORRECTIVE ACTIONS
revenue
expenses
subsidy
vehicle miles
vehicle hours
passengers
revenue ÷ expenses
subsidy ÷ vehicle miles
subsidy ÷ vehicle hours
subsidy ÷ passengers
reduce administration
reduce staff
streamline procedures
reduce service
reroute and reschedule
improve promotions
increase fares
modify fare structure
increase contract service
improve fleet reliability

Purpose and Use - The term subsidy is applied to these four indicators because they focus on the portion of system revenues attributable to governmental support rather than user support. The total revenue ÷ total expense indicator includes non-subsidy revenue but is useful as a reference base for comparison of the subsidy measured. This indicator and subsidy ÷ passengers measure the cost effectiveness of service by assessing the amount of governmental financial support for the total system or per passenger.

Subsidy ÷ vehicle miles and subsidy ÷ vehicle hours also indicate the amount of government support, but in terms of the system's output or resource units generated. They indicate how efficiently the public sector's funds are being used and, over time, the relative degree of government versus user revenues needed to sustain the system.

All four indicators can be useful for policy decisions as well as managerial monitoring. Governing bodies may, for example, desire to specifically limit the amount of subsidy in addition to maximizing the amount of passenger revenue. These measures could provide the basis for adopting subsidy objectives.

Data Required and Definitions - Data needed for calculation of the four subsidy measures includes: total revenue, total expenses, amount of subsidy, vehicle miles, vehicle hours, and passengers. All data must be taken from the same time period or updated to ensure comparability.

All data items except the following have been defined previously and are also repeated in the Appendix A glossary.

> Subsidy = all government grants or funds obligated to and used by the system from local, State or Federal units of government. In Pennsylvania, Sections 406, 203, and Free Transit Program grant revenues are not included as subsidy.

Interpretation

Subsidy indicators, like all financial indicators, are subject to external effects from the economy and, thus, should be periodically reviewed to ensure they are current, whether external comparisons or internal time-series comparisons are made.

Comparison of subsidy indicators to those for other systems is difficult, since local objectives and subsidy capability can vary substantially from place to place. While data is available from other systems, as shown in Appendix B, internal time-series comparisons would be a much easier and more relevant method of analysis. If local policies or objectives were adopted for subsidy limitations, the analysis would be more meaningful for decision-makers as well as managers.

Corrective Actions

Subsidy indicators may reflect a need to reduce costs or increase operating revenue, especially when local officials have set limits on the

amount of local public subsidy they are willing to pay. The subsidy indicators should be used primarily for supporting funding policy decisions rather than day-to-day managerial and operational decisions.

Corrective actions taken for unacceptable subsidy or revenue/expense ratios are likely to be decisions to reduce the amount of subsidy. This could require: (1) an overall reduction in operations; (2) an increase in passenger revenues; or (3) an increase in ridership at the same level of service.

A listing on Page 38 summarizes the kinds of specific corrective actions that should be considered for subsidy problems and other financial-related problems.

Corrective Actions for Expense- and Revenue-Related Problems

1. Modify fare structure to be equitable for all riders (e.g., change from flat fare system to zone or graduated fares).

2. Increase speed of revenue vehicles by decreasing dwell time at stops, rerouting, increasing stop spacing, or increasing speed of fare collection.

3. Decrease overall expenses, administrative expenses or other expense items.

4. Increase amount of service provided at same total expense.

5. Reroute services and/or adjust service coverage area as needed to attract more riders from other generators or service areas.

6. Alter service schedules to eliminate unproductive service or increase frequency of stops in more productive areas of coverage.

7. Reduce amount of administrative activities.

8. Increase ridership on existing routes through improved or expanded marketing and promotions efforts.

9. Decrease or eliminate revenue service in locations where, or at times when, ridership is marginal or unproductive.

10. Decrease amount of deadheading.

11. Increase the proportion of fare-paying passengers to contract service.

12. Increase the amount of contract and non-passenger revenue. Consider ancillary services, such as goods or package shipment, that would not compete with the private sector. Also consider expansion of advertising sales on vehicles.

Corrective Actions for Subsidy-Related Problems

Actions to Reduce Operations - If this direction were chosen, the system manager would need to thoroughly evaluate all segments and areas of service to decide how and where cut backs should be made. In this case, all aspects of operation and administration should be assessed, with priorities chosen regarding which areas to reduce before others. When faced with this situation, the manager should also apply all the other evaluation categories of this manual. A sequence of actions could be:

1. Streamline and reduce administrative activities and expenditures on the basis of retaining necessary versus desirable components.

2. Reduce administrative staff.

3. Examine and streamline all procedures and activities of operating staff.

4. Reduce operating staff.

5. Alter, decrease or eliminate routes and/or schedules in locations where ridership is marginal or unproductive and/or deadheading can be eliminated.

Actions to Increase Passenger Revenues and/or Ridership

1. Reroute, reschedule and/or adjust service area coverage, as needed, to attract more riders from areas or generators with higher demand potential.

2. Expand or improve public relations and marketing efforts to attract more riders. Assess and improve all components affecting public image and passenger amenities.

3. Increase fare structure.

4. Modify fare structure from a flat fare to a zone fare system with graduated increases by distance.

5. Increase the amount of contract service, advertising sales, and any other ancillary revenue-generating activities.

6. Improve on-time performance

7. Improve fleet reliability, safety and appearances.

8. Improve driver courtesy and the handling of complaints.

NON-FINANCIAL PERFORMANCE

RIDERSHIP

General Indicators

46. Total passengers ÷ total vehicle miles
47. Total passengers ÷ total vehicle hours

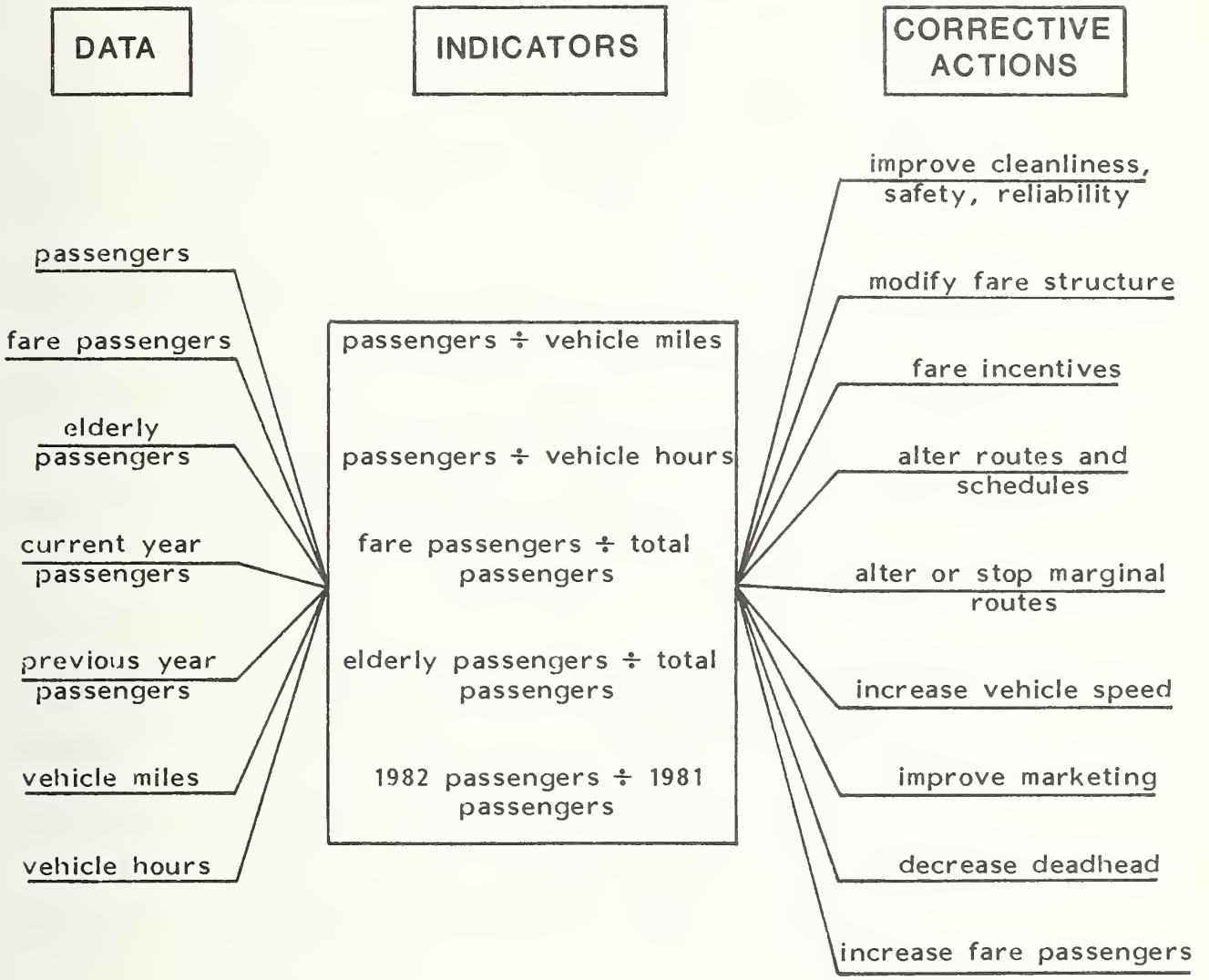
Supplemental Indicators

48. Fare-paying passengers ÷ total passengers
49. Elderly passengers ÷ total passengers
50. Current-year passengers ÷ previous-year passengers

Purpose and Use - The two general indicators measure the consumption effectiveness of the system--the degree to which the system is utilized compared to the amount of service provided. These indicators can signal a need to either increase the ridership at existing service levels or decrease or eliminate service that has marginal ridership. While they do not measure cost, the degree of effectiveness found can be a direct determinant of the amount of expenditures.

Systems or parts of systems found to have a poor level of consumption, or usage, are spending funds that could be reduced or redirected to more productive service. Systems with high levels of consumption are

RIDERSHIP


DATA
INDICATORS
CORRECTIVE ACTIONS
passengers
fare passengers
elderly passengers
current year passengers
previous year passengers
vehicle miles
vehicle hours
passengers ÷ vehicle miles
passengers ÷ vehicle hours
fare passengers ÷ total passengers
elderly passengers ÷ total passengers
1982 passengers ÷ 1981 passengers
improve cleanliness, safety, reliability
modify fare structure
fare incentives
alter routes and schedules
alter or stop marginal routes
increase vehicle speed
improve marketing
decrease deadhead
increase fare passengers

usually providing service in a worthwhile and non-wasteful fashion. The indicators are useful for system-wide analysis and, even more, for analyzing individual routes and subareas. Subsystem analysis can pinpoint the specific service segments that need corrective action.

The three supplemental indicators are more relevant to measuring the system's social impact and general ridership goals than they are to management evaluation. The comparison of fare-paying passengers and elderly passengers to total passengers would measure the system's degree of reliance on fare-paying passengers versus contract service passengers and/or the elderly as a group.

Current-year passengers compared to previous-year passengers could be used to measure the achievement of a system goal or objective depending upon how important such goals are to the governing body. Some organizations may want to hold the manager accountable for attaining certain levels of ridership or general proportions between elderly, fare-paying, and total passengers.

Data Required and Definitions - Data needed for the five ridership indicators includes: total passengers, fare-paying passengers, elderly passengers, current- and previous-year passengers (two twelve-month periods or the same two quarters from different years), total vehicle miles and total vehicle hours. All data items must be taken from the same time period or updated to ensure comparability. All data items

except the following have been defined previously and are also repeated in the Appendix A glossary.

> Elderly passengers = In Pennsylvania, elderly passengers are persons 65 years of age and older.

Interpretation

The two general indicators can be used for comparison to other systems with similar characteristics and conditions. Lower values compared to previous data or data from other systems would be considered unsatisfactory. As noted under the Purpose and Use section, low values would signal a need to either increase ridership on existing service or decrease or eliminate service that has marginal ridership.

Different types of operation can be expected to have different levels of performance. For example, demand responsive or other non-fixed route service will usually have lower ratios of passengers per hour or mile than fixed route service, simply because fixed route service captures more persons per mile or hour of service than demand responsive can. Demand response vehicles must travel to pick up each passenger, whereas fixed route service usually boards a number of passengers from a limited number of stops. Thus, in the decision to offer fixed route service versus non-fixed route service, decision-makers should be aware that there are significant tradeoffs between meeting a social need and attaining higher levels of effectiveness and efficiency.

The three supplemental indicators are generally suited to summarizing the system's social impact by comparison to past years' data and noting the system's attainment of overall ridership goals. Thus, an unacceptable result would depend on what objectives for ridership volume and mix were formally adopted by management and/or the governing body (i.e., objectives for volume of ridership, and or proportion of elderly riders or fare-paying passengers versus contract or subsidized riders).

Corrective Actions

Increasing ridership overall, or for portions of a system, is probably one of the most common desires of transportation managers. Objectives to do so can take two general directions: to simply add more riders or increase the riders' frequency of use of existing service; or to decrease the amount of service needed to retain existing ridership.

The first approach could focus solely on promotion and marketing without regard to the cost efficiency of the system (i.e., maintain or expand the system but increase ridership). The second approach could focus solely on decreasing or eliminating marginal areas of service as a means of increasing the ratio of passengers to service operated.

The best approach is probably a combination of the two, i.e., first, making sure that there is a product to sell (safe, clean, reliable and well-run service) and second, making sure that marketing and

promotional activities are effective in selling the product. Actions could also be directed to shifting the balance of fare-paying and elderly passengers if the ratios found were not consistent with the organization's objectives. Corrective actions to increase ridership ratios could include:

1. Improve safety, reliability, cleanliness and comfort of vehicles; conditions at all bus stops; and advertising of schedules.

2. Modify fare structure to be equitable for all riders (e.g., change from flat fare to zone or graduated fares). Fare incentives, such as coupons, monthly or multi-ride tickets at reduced rates, or reducing certain zone changes, might also be useful.

3. Alter, routes and/or schedules, as needed, to attract more riders from more generators or origins.

4. Alter, decrease or eliminate routes and/or schedules in locations where, or at times when, ridership is marginal or unproductive.

5. Increase speed of revenue vehicles by decreasing dwell time at stops, rerouting, increasing stop spacing or increasing speed of fare collection.

6. Improve marketing and promotional program to reach potential new riders.

7. Decrease amount of deadheading.

8. Change fare policy to require greater proportion of ridership to pay fares.

SERVICE QUALITY

General Indicators

51. Stops on time ÷ total stops
52. Complaints ÷ number of drivers

Supplemental Indicators

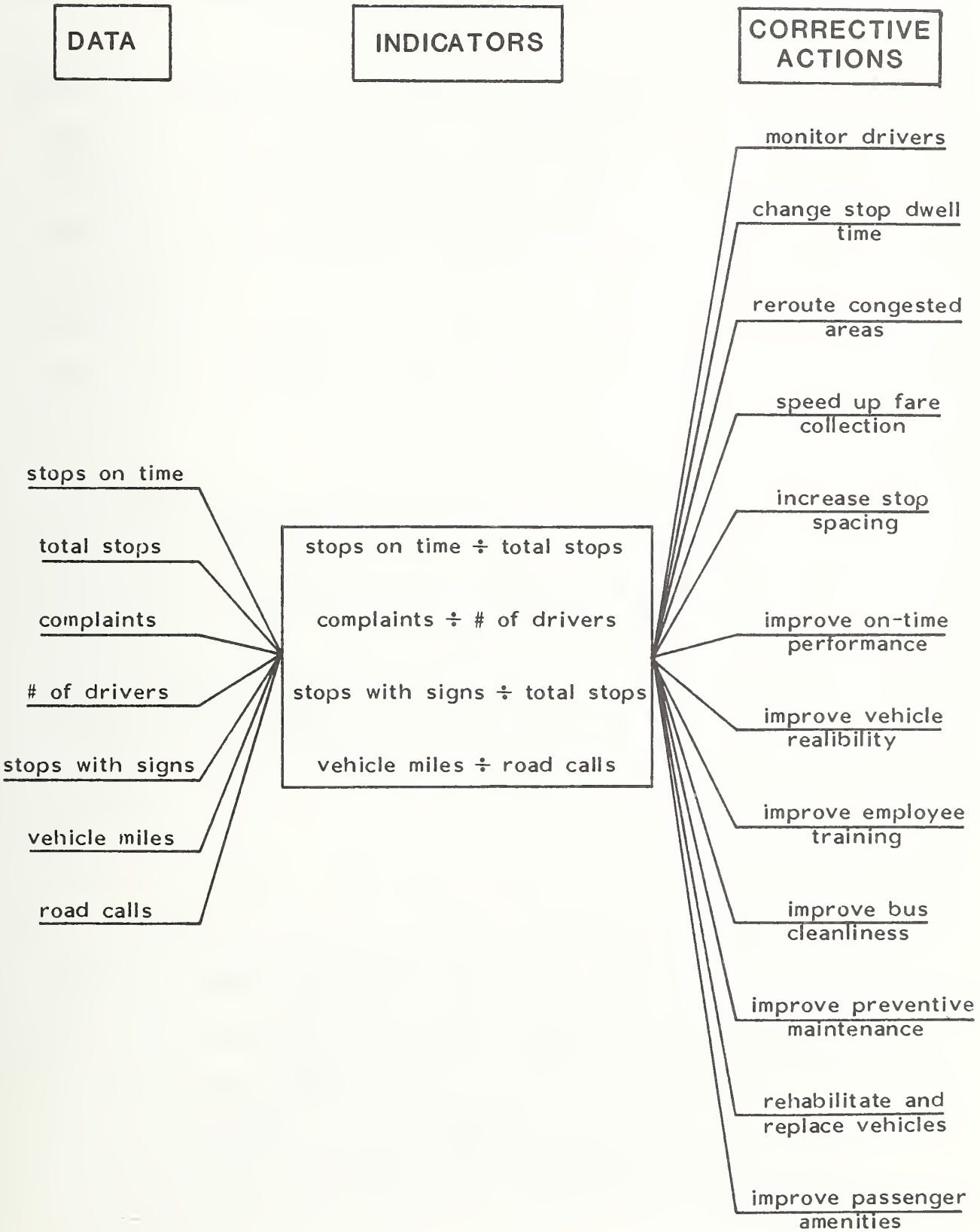
53. Stops with signs ÷ total stops
54. Vehicle miles ÷ road calls

Purpose and Use - These indicators enable a limited quantitative analysis of a qualitative aspect of transportation systems--service quality. They can be helpful in verifying whether or not perceptions and claims about a system's quality are founded or not.

When using these four indicators, it would also be helpful to make an evaluation of the system's passenger amenities (e.g., shelters, benches, signs, printed schedules and displays, etc.). While these elements are not as amenable to quantitative analysis, they can provide further detail about the quality and condition of the amenities that may be affecting service quality.

If ridership is felt to be too low or complaints are too frequent, the quality of service may need improvement. In addition to management's

SERVICE QUALITY



judgement, an on-board survey of riders and a sample of non-riders may verify whether or not service quality needs improvement.

Data Required and Definitions - Data needed for calculation of the four service quality measures includes: stops on time, total stops, complaints, number of drivers, stops with signs, vehicle miles and road calls. All data items must be taken from the same time period or updated to ensure comparability. The following data definitions are also contained in the Appendix A glossary, along with others that have been defined previously. Total stops, number of drivers, and stops with signs are self-explanatory.

> Stops on time = stops that are 0 minutes early to 5 minutes late.
>
> Complaints - complaints received by the transit system either verbally or in writing.
>
> Road calls - occasions when a revenue vehicle has a breakdown on the road and must be towed or repaired at the site of the breakdown by maintenance staff or a maintenance vendor.

Interpretation

Unacceptable or low values for service quality indicators show a higher incidence of undesirable conditions (stops not on time, complaints, road calls, or stops without signs) than might have been set as objectives for the system. Comparison of such values to other systems is very difficult because of varying conditions. Comparisons to either formally adopted objectives or time-series data is much more feasible.

Service quality data can be readily monitored on a monthly or quarterly basis without concern for financial or economic impacts, since financial data is not involved. This kind of data lends itself to plotting of trends on a graph or table on a monthly basis. As indicated previously, the manager should also evaluate system amenities as a supplement to regular service quality data analysis. Assessing the quality of the system's amenities can expand the evaluation's diagnostic capability.

Corrective Actions

Improving service quality should focus directly on actions to improve the functions represented by the four indicators. In support of such improvements, system amenities (shelters, benches, signs, printed schedules, etc.) could also be improved if found deficient.

The following items are examples of the kind of corrective actions that may be useful for service quality problems.

1. Stops on Time ÷ Total Stops

   (1) Monitor driver's on-road performance and correct.
   (2) Change dwell time at stops.
   (3) Reroute and/or reschedule vehicles if congested area or peak service appears to be problematic.
   (4) Reroute vehicles to eliminate excessive turns or indirect routings.
   (5) Increase speed of fare collection.
   (6) Increase stop spacing.
   (7) Enforce no auto parking at bus stops.
   (8) Improve reliability of vehicles.
   (9) Utilize two-way radio communications to monitor and assist drivers.

2. Complaints ÷ Number of Drivers

(1) Improve on-time performance.
(2) Improve vehicle reliability and safety.
(3) Improve driver training program and driver public relations guidelines, dress and appearance rules, passenger relations, and passenger assistance guidelines.
(4) Conduct periodic on-board monitoring of driver performance and behavior, and take disciplinary actions if needed.
(5) Improve or institute employee training for other employees who communicate with the public besides drivers. Periodic employee performance evaluations should be made and related to annual salary changes.
(6) Improve public information and advertising program.
(7) Improve bus interior and exterior cleaniness.
(8) Institute or improve procedures for handling complaints. Efforts should be made to make responses as quickly as possible and in writing when appropriate. Call-backs should be made to the complainant some time after corrective action is taken to see if the complaint has been satisfied.
(9) Investigate suspected problems with specific drivers.

3. Vehicle Miles ÷ Road Calls

(1) Improve preventive maintenance system.
(2) Improve routine maintenance and inspection procedures and/or staff or vendor capabilities.
(3) Improve quality of vehicle repair work and repair staff or vendor capabilities.
(4) Rehabilitate or replace vehicles that have surpassed their useful life and are requiring maintenance and/or repair with unreasonable frequency. In Pennsylvania design life for standard transit coaches is approximately 12 years, including major component overhauls. Schoolbuses and vans usually last ten years or less.
(5) Select new maintenance subcontractors or vendors if external service purchase is to be used.

4. Place bus stop signs at all regular bus stops.

5. Decrease the number of flag stops by establishing new, or consolidating existing, bus stops.

6. Improve the quality and/or availability of passenger amenities, such as shelters, benches, signs, printed schedules, displays, and clean and comfortable buses.

LEVEL OF SERVICE

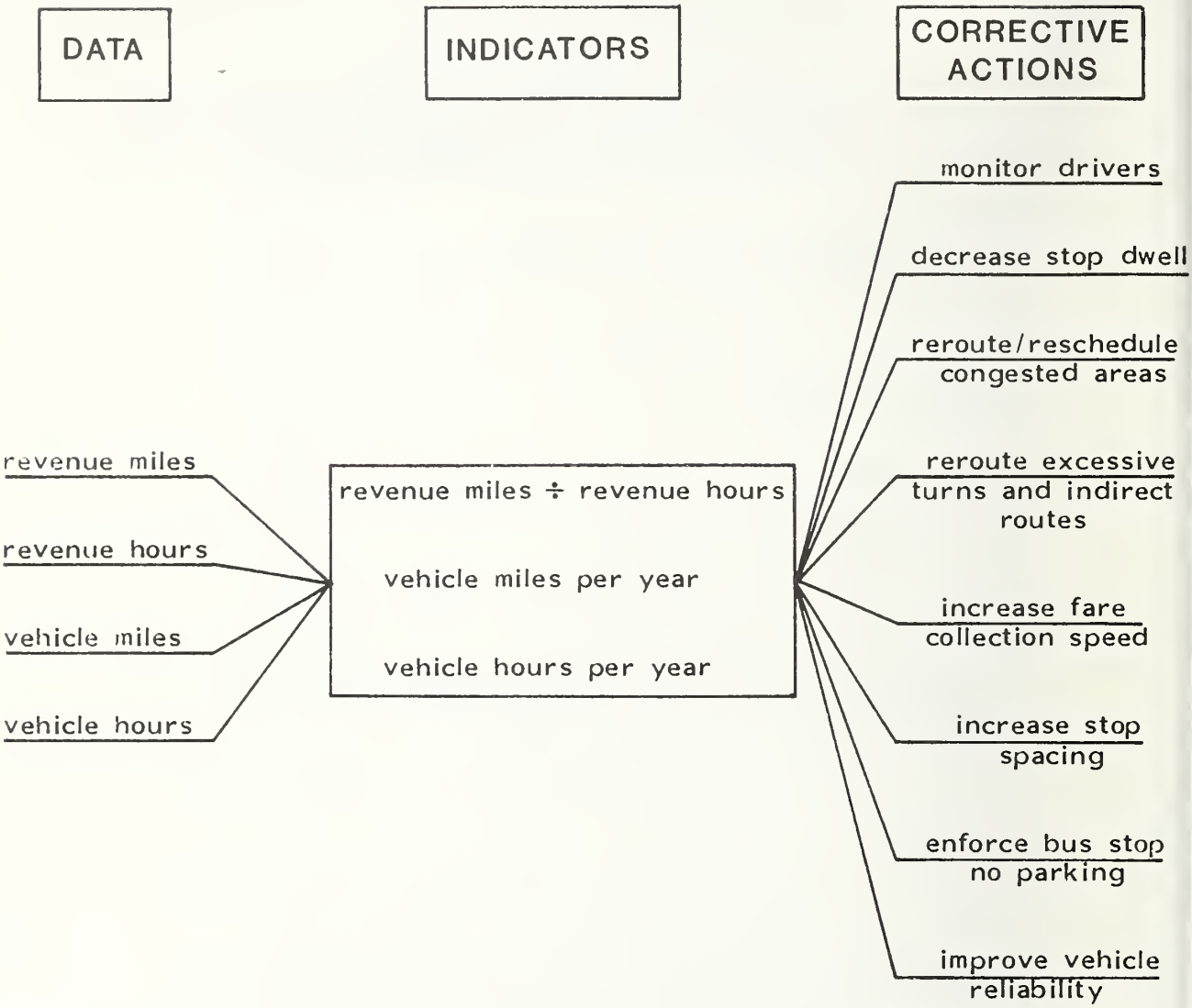
General Indicators

55. Revenue miles ÷ revenue hours (average speed)
56. Vehicle miles per year
57. Vehicle hours per year

Purpose and Use - These three indicators provide some measure of the amount or level of service provided. The average speed indicator, however, is quite different in kind and value from the other two. Average speed is a useful diagnostic indicator that can signal a variety of operational problems that may occur during revenue service. Like other non-financial indicators, average speed can be evaluated on a monthly and quarterly basis without concern for financial fluctuations.

The other two--vehicle miles per year and vehicle hours per year--are simply indicators of the level of service being provided. They are not useful for detailed performance evaluation but, rather, for comparison of annual changes in the amount of service. They may be more useful if annual objectives are set for ridership.

LEVEL OF SERVICE



Data Required and Definitions - The three indicators require data on revenue miles, revenue hours, vehicle miles and vehicle hours for the period of time evaluated. All of these data items have been defined previously and are contained in the Appendix A glossary.

Interpretation

Changes in average speed can indicate potential problems with the service that may adversely affect the system's productivity and rider's attitudes. A decrease in average speed could indicate a number of problems, such as poor performance by drivers, too much time at bus stops, traffic congestion and routing problems, or excessive vehicle breakdowns.

Generally, rural fixed route service should have a significantly higher speed than urban service due to lower population density and less congestion. Similarly, rural demand response should be faster than urban demand service, and demand service should always be faster than fixed route service, especially in rural areas. Managers should be aware that such major differences are to be expected. Notable increases in average speed may be positive, but could also reflect a decrease in boardings, especially on long rural routes or in large demand response service areas.

As noted previously, the vehicle miles per year and vehicle hours per year are very broad measures that do not necessarily reflect or explain

service problems. Changes up or down could reflect positive or negative trends, and would require more in-depth analysis with other non-financial performance indicators to determine on causes and specific areas needing correction. The two indicators may give cause to look further when objectives or expectations are not achieved or when an unexpected increase or decline occurs.

Corrective Actions

Several kinds of actions can be taken to change the system's average speed. Increasing or decreasing a system's vehicle miles or hours is dependent on the overall system service plan, funding availability, and demand for service. Corrective actions per se toward changing vehicle miles or hours per year would be done indirectly. A funding objective or constraint may be translated to service by using vehicle miles or hours as one of the measures associated with attaining a certain level of service.

Revenue Miles ÷ Revenue Hours

1. Monitor drivers' on-road performance and correct.
2. Decrease dwell time at bus stops.
3. Reroute and/or reschedule vehicles if congested area or peak service appears to be problematic.
4. Reroute vehicles to eliminate excessive turns or indirect routings.
5. Increase speed of fare collection.
6. Increase stop spacing.
7. Enforce no auto parking at bus stops.
8. Improve reliability of vehicles.

SAFETY

General Indicator

58. Vehicle miles ÷ number of revenue vehicle accidents

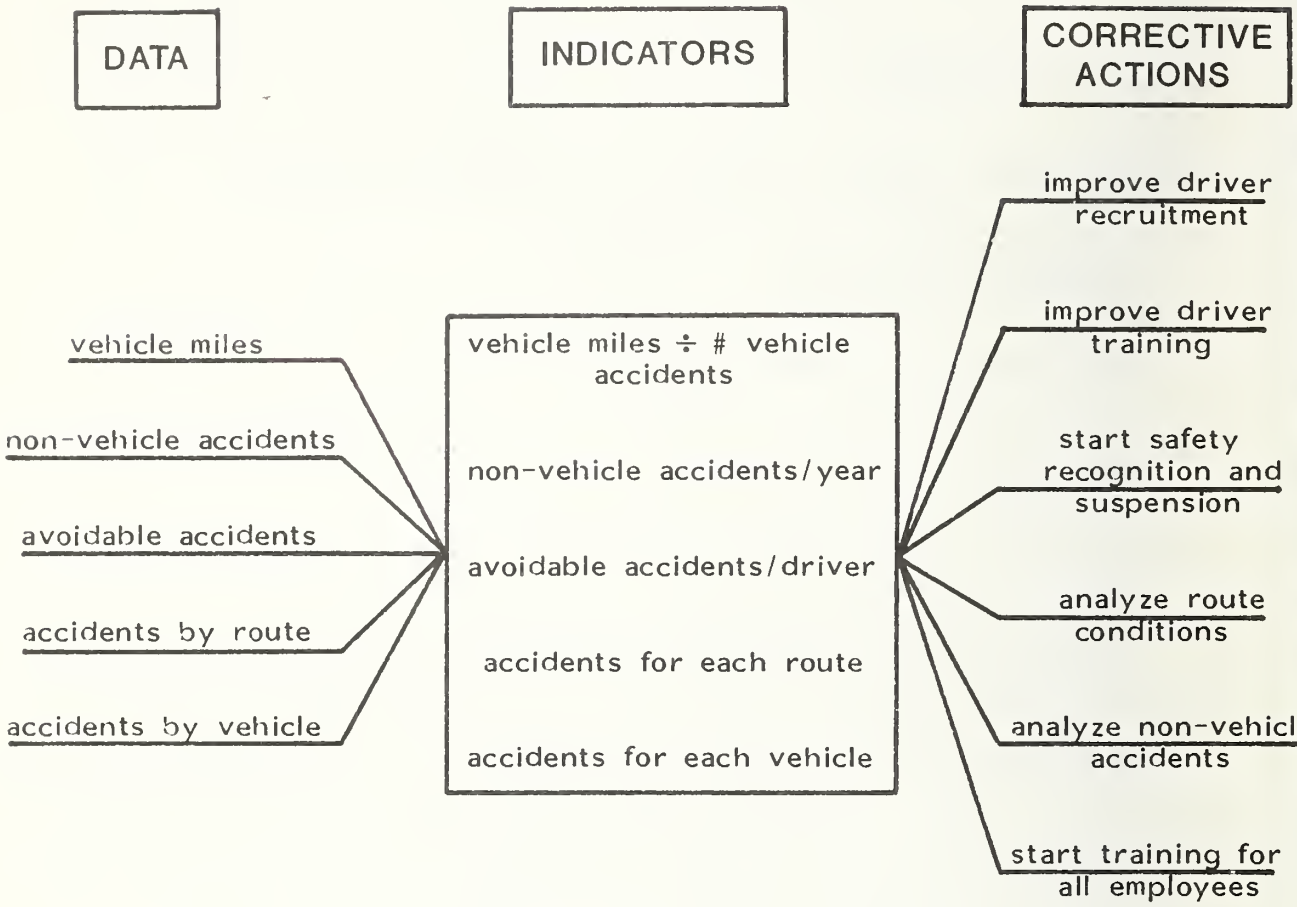
Supplemental Indicators

59. Non-vehicle accidents per year
60. Avoidable vehicle accidents per individual driver
61. Revenue vehicle accidents for each route
62. Revenue vehicle accidents for each vehicle

Purpose and Use - Safety performance evaluation provides an indication of the degree to which the service is operated safely. All five indicators measure the frequency of accidents for various components of the system. The variety of information on accidents can help pinpoint what particular components, drivers, or subareas of service may need to be improved in terms of safe operations. Together, these five indicators provide examination both system-wide and by subarea or segments.

Data Required and Definitions - Data needed for calculating the five safety indicators include: vehicle miles, non-vehicle accidents, avoidable vehicle accidents by driver, revenue vehicle accidents for each route and each vehicle. All data should be taken from the same time period to ensure comparability. All except the following data items have been defined previously and are also contained in the Appendix A. glossary.

SAFETY


DATA
INDICATORS
CORRECTIVE ACTIONS
vehicle miles
non-vehicle accidents
avoidable accidents
accidents by route
accidents by vehicle
vehicle miles ÷ # vehicle accidents
non-vehicle accidents/year
avoidable accidents/driver
accidents for each route
accidents for each vehicle
improve driver recruitment
improve driver training
start safety recognition and suspension
analyze route conditions
analyze non-vehicle accidents
start training for all employees

- Non-vehicle accidents = all accidents involving the transportation system which do not involve an in-service transit vehicle and are a public liability in nature.

- Avoidable vehicle accidents = accidents resulting from infractions of either a motor vehicle law or a system policy by the transportation system's driver.

- Revenue vehicle accidents = accidents that involve an in-service transit vehicle and result in a minimum of $50 property damage and/or bodily injury.

Interpretation

Low or unacceptable values for the safety indicators would be shown by a time-series comparison or an objectives/performance comparison which exhibited a trend of increasing frequency of accidents. Such trends would generally indicate a need to improve the system's driver training and safety procedures. Each of the five indicators is a simple frequency count per vehicle mile, year, driver, route or vehicle. Both time-series comparisons and comparisons to other similar systems would be useful assessments.

Corrective Actions

Actions to improve safety records are, for the most part, concerned with improving driver training and performance. In some cases, an unsafe vehicle or an area with a hazardous condition could be the

problem. These indicators can be useful in determining whether corrective action needs to focus on particular driver(s) or on system procedures and practices.

Specific actions could include:

1. Improve driver recruitment and training procedures.
2. Institute minimum number of hours of behind-the-wheel driver training for each driver per year.
3. Institute driver safety recognition program and suspension program.
4. Analyze all routes for possible hazardous conditions that correspond to frequency of accidents, and consider whether special driver procedures and/or rerouting are necessary.
5. Analyze cause, frequency and location of non-vehicle accidents, and correct any hazardous conditions associated with system's property.
6. Institute training component for all relevant employees.

III

Case Study

INTRODUCTION

This chapter provides an example to illustrate how the performance evaluation procedures of this manual can be applied. Obviously, the format and style of presentation of an evaluation can vary to suit individual or organizational preferences. What is most important is that the substance of the evaluation be understandable and useful.

Since this manual was developed for small urban and rural systems in Pennsylvania, the example developed has been cognizant of the data reporting presently required by the Commonwealth to be used for Federal and State operating assistance grants budgeting, quarterly and annual data reporting. These forms, known in Pennsylvania as Form ROA-3, already provide for the collection of most of the data needed for calculation of all the general and supplemental indicators in the manual. The data for 15 of the 18 performance indicators used in this case study can be readily obtained from the PaDOT ROA forms. The other three data items should be maintained by any transit system, even though they do not need to be reported to the funding sources. The case study is of a hypothetical system.

EXAMPLE PERFORMANCE EVALUATION: EXAMPLE COUNTY TRANSIT AUTHORITY

PURPOSE

This report is a performance evaluation of the Example County Transit Authority (ECTA) as of the second quarter of Fiscal Year 1981/82. The evaluation was performed primarily to support the efforts of the Board and management to operate an efficient and effective public transit service in Example County. It is intended to provide ECTA with information necessary for the implementation of improvements if certain aspects of performance have not totally met the Board's or the manager's expectations. The evaluation is based on a performance evaluation manual made available by PaDOT.

SYSTEM OVERVIEW

ECTA operates small urban fixed route service daily in and around the County seat and route deviation service two days a week on a limited number of routes in the outlying rural portions of the County with a fleet of four small buses and four vans. Three of the buses are used for the urban area service from 7:00 AM to 6:00 PM, Monday through Friday, and the fourth bus is used for peak service between 7:00 AM and 9:00 AM and 4:00 PM and 6:00 PM and as a back-up. The four buses are two years old and were procured by the Authority specifically for the

urban area fixed route service, which was originated five years ago with vans.

Three of the vans are used for the system's three rural public routes two days a week and for non-public contract service to agencies and church groups throughout the week. The fourth van is a back-up vehicle. The vans are six years old and were transferred to ECTA by the County's social service agencies as part of an agreement for ECTA to operate the agencies' service.

During FY1980/81, the ECTA Board of Directors formally adopted several system objectives for the first time. Previously, goals and objectives were limited to those developed in 1975 for the original system plan and those included in grant applications. ECTA believes that this action is important to help guide and evaluate the system's progress, and intends to continue to refine or expand these objectives each year. During FY1981/82, ECTA is focusing on efforts to increase passenger revenue through a major fare increase and attracting new riders. High priority has also been given to minimizing operating cost increases this year.

ECTA GOALS AND OBJECTIVES

ECTA's primary goal is to provide public transportation to the residents of Example County, with particular emphasis on the needs in and

around the County seat, which is the County's major population center. In 1980, the urbanized area population of the County seat was about 14,000 and the total County population was about 50,000 persons. Its secondary goal is to manage and provide as much non-public, agency-oriented service that cannot be integrated as part of the public system as possible.

Like many rural systems, ECTA does not have a comprehensive set of written system objectives. It does have the following quantifiable objectives, which were developed over the past few years as modifications of objectives originally set for the system plan and feasibility study done seven years ago. These objectives were set primarily as support for grant applications and from a growing concern regarding the future status of Federal funding support.

Financial Objectives

1. Recover at least 40 percent of public service operating expense from system revenues by the second quarter of FY1981/82.

2. Contain administrative costs to a maximum of 15 percent of total operating expense.

3. Contain overall operating cost increase to a maximum of 10 percent between FY1980/81 and FY1981/82.

Ridership Objectives

4. The system should attain a minimum of 1.0 passengers per vehicle mile.

5. At least 65 percent of all passengers should be fare-paying passengers.

Service Quality Objectives

6. At least 95 percent of all stops should be on time.

7. There should be no more than two complaints per individual driver per year.

The ECTA Board also adopted some non-quantifiable objectives for public relations, passenger amenities, personnel and management. While non-quantifiable, they can be evaluated simply by checking the status of each functional area. Also, the objectives may provide more detail and understanding of the system's performance, ridership, and service quality indicators. In total, the adopted goals and objectives can serve as a basis for the evaluation, along with other financial and operating data.

FUNCTIONS AND INDICATORS TO EVALUATE

This evaluation reviews both financial and non-financial functions, and is a thorough review of the entire ECTA system. It is intended as an end-of-Calendar-Year 1981 annual review of data compared to corresponding data for the previous fiscal year and the previous six months. Where possible, comparisons are made to data from other similar systems that may be readily available. Specifically, assessments are made of expense, revenue, ridership and service quality indicators since ECTA has formally adopted objectives under these categories.

TABULATION OF INDICATORS

Most of the data needed for the performance evaluation were readily available on the ROA-3 reporting forms used by ECTA to support quarterly invoices to PaDOT. Indicators provided in the PaDOT Performance Evaluation Manual that need to be calculated to assess the status of ECTA's adopted objectives include:

Financial Objectives Indicators

1. Total expenses ÷ total vehicle miles
3. Total expenses ÷ total passengers
6. Administrative expenses ÷ total expenses
39. Passenger revenue ÷ total expenses
42. Total revenue ÷ total expenses

Ridership Objectives Indicators

46. Total passengers ÷ total vehicle miles
48. Fare-paying passengers ÷ total passengers

Service Quality Objectives Indicators

51. Stops on time ÷ total stops
52. Complaints ÷ number of drivers*

*Should be assessed for each individual driver as well as system-wide.

In addition to the above indicators, ECTA management is also concerned that certain other aspects of system functions be measured. Those indicators, as enumerated in the PaDOT Performance Manual, include:

2. Total expenses ÷ total vehicle hours
4. Total expenses ÷ revenue miles
13. Maintenance cost ÷ vehicle miles
23. Maintenance hours ÷ number of revenue vehicles*
41. Total fare-paying passenger revenue ÷ total revenue
49. Elderly passengers ÷ total passengers
54. Vehicle miles ÷ road calls
58. Vehicle miles ÷ number of revenue vehicle accidents

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*Should be assessed for each vehicle as well as system-wide.

By using the ROA-3 form for FY1980/81 and the first two quarters for FY1981/82, most of the above 16 indicators can be calculated. Only four other data items are required that are not on the ROA forms but are available from the system's record files, including: stops on time, maintenance hours, number of road calls, and number of revenue vehicle accidents.

Stops on time have been obtained from an ongoing sample monitored for ECTA by a group of elderly volunteers. This was first done for a one-week period on all routes during December 1980. The procedure was repeated for one week during each of the months of March, July and November 1981. Maintenance hours are available from staff time records and repair records from local garages for each vehicle. The number of road calls and revenue vehicle accidents are readily available from ECTA management records. The calculation of the 17 indicators produced the results shown in Table 1.

Table 1
TABULATION OF FY1980/81 AND FIRST SIX MONTHS OF 1981/82 PERFORMANCE INDICATORS

Indicators	ECTA Objective Comparative Values	FY1980/81	1st 6 months FY1981/82	% Change
FINANCIAL INDICATORS				
Expense				
1. Total exp. ÷ total veh. mi.		$1.50	$1.68	+12%
2. Total exp. ÷ total pass.		$1.85	$1.98	+ 7%
3. Adminis. exp. ÷ total exp.	20% max.	18%	19%	+ 6%
4. Main. cost ÷ veh. mi.		$ .38	$ .44	+16%
5. Main. hrs. ÷ # revenue veh.*		480	560	+17%
Revenue				
6. Pass. revenue ÷ total exp.		26%	34%	+31%
7. Total fare-paying pass. revenue ÷ total revenue		60%	72%	+20%
Subsidy				
8. Total revenue ÷ total exp.	40% min.	29%	38%	+31%
NON-FINANCIAL INDICATORS				
Ridership				
9. Total pass. ÷ total veh. mi.	.75 max.	.71	.78	+10%
10. Fare-paying pass. ÷ total pass.	65% min.	60%	65%	+ 8%
11. Elderly pass. ÷ total pass.		40%	35%	-12%
Service Quality				
12. Stops on time ÷ total stops	95% min.	91%	88%	- 3%
13. Complaints ÷ no. of drivers*	2/yr. max.	3	1.25	(N/A)
14. Vehicle miles ÷ road calls		8,550	8,420	- 2%
Safety				
15. Vehicle miles ÷ # of revenue vehicle accidents		20,500	24,300	+18%

SOURCE: Example County Transit Authority, Management and Financial and Operating Records, January 1982.

*Maintenance for each vehicle and complaints for each driver will be scrutinized separately.

ANALYSIS AND INTERPRETATION

Financial Performance - Since the 1981/82 data is for the first six months of the fiscal year only, it should be remembered that significant changes could result by the end of the fiscal year due to the timing of incurring expenses or revenues that may cover more than the second six months of the year (e.g., annual insurance premiums, major repair bills, passenger revenue or other items that are not constant each month). The data are still, quite useful, however, to see whether ECTA is on target with its objectives and, by projecting major expense and revenue changes for the second six months, whether the performance objectives are likely to be met at year end. Reversing negative trends in the system may be easier at mid-year than at year-end, especially if any severe problems are found.

Expense - The expense indicators in Table 1 all show increases between the two time periods. This is negative from a cost-containment viewpoint, but is expected with inflationary impacts and cost of living increases approved by the Board this year. The 12 percent increase in expenses per vehicle mile exceed the 10 percent objective set by the Board, but is in line with the Consumer Price Index for the period.

The 10 percent objective would have been met if maintenance and repair costs had not increased as quickly as indicated--a 16 percent increase over last year's maintenance cost per vehicle mile and a 17 percent

increase in maintenance hours per vehicle. This is reflective of the fact that the four vans which ECTA started with are now over seven years old and have had substantial maintenance, repair and major overhaul needs this year. Replacement of these four vehicles could significantly reduce maintenance expenses.

It is notable that total expenses per passenger increased by only seven percent. This is due to ECTA's extensive promotional efforts this year, which succeeded in gaining not only community acceptance of the fare increase but more regular fare-paying ridership and the clients of the County's two sheltered workshops for the first time. The other positive expense trend is that the administrative expense ratio has been held to an increase of only one percentage point. ECTA's 19 percent administrative expense ratio is well below the ratio for many systems, which may range between 20 and 30 percent.

Revenue and Subsidy - On the revenue side, it is apparent that this year's fare increase and the strong promotional effort by the Board and our Citizens Oversight Council has paid off. While the current 38 percent revenue-to-expense ratio is not quite up to the 40 percent objectives set by the Board, it does represent a 31 percent increase over last year's ratio.

The increased ratios of passenger revenue to total expenses and fare-paying passenger revenue to total revenue substantiate the fact that

the vast majority of the increase was due to the fare and ridership increases. The substantial increase in merchants' advertising revenue was also helpful, even though it is not a major source of income. ECTA has received $1,525 in advertising fees for the first two quarters of FY1981/82, whereas the annual total for FY1980/81 was only $1,850. If the same amount is received for the next six months, ECTA will experience a 65 percent increase in advertising revenue.

Ridership - Ridership statistics also reflect the success of the extensive promotional campaign last year. While no new major service was added, the route and schedule modifications made this year to better serve work trips helped achieve the 10 percent increase in passengers per vehicle mile. Also, as shown by the ratios of fare-paying versus elderly passengers (whose fares are paid by the Free Transit program), the majority of increases were due to fare-paying riders rather than the elderly who have used the system heavily since its inception.

It should also be noted that the ratio of .78 passengers per vehicle mile exceeded the objective of .75 established by the Board. This ratio compares favorably with other small urban and rural systems shown in the PaDOT Performance Evaluation Manual.

Service Quality - The service quality indicators show two areas that could become problematic if improvements are not made in the near

future. The percentage of stops on time (0 minutes early to 5 minutes late) decreased by three percent during the first six months of this year.

This is due primarily to three factors: (1) route and schedule changes made at the beginning of the year; (2) to a lesser extent, increased ridership; and (3) the unusual number of snow and ice days in December. Understandably, some time is needed for drivers to adjust to such changes and the slow-ups from the ice and snow are beyond our control. It is expected that all of these factors, except perhaps snow and ice, will be overcome, and on-time performance should meet or exceed last year's record. Because of the early setback, however, it may not be possible to meet this year's objective of 95 percent on-time performance. This condition will be monitored closely, and drivers instructed and assisted accordingly.

The other unsatisfactory trend, while not yet at a drastic rate, is the two percent decrease in miles between road calls. Again, this is an indication of the four vans' deteriorating condition and reaching the end of their useful life. The negative effect of this condition--causing increased maintenance expenses--was noted above under the expense evaluation. These four vans are in need of replacement as soon as possible.

The third service quality indicator, complaints per driver per year, currently shows a positive trend. If the rate of 1.25 complaints per driver is maintained during the last half of the year, the system will attain a 17 percent reduction (2.5 compared to 3 for last year) in complaints per driver by the end of the fiscal year. This rate is coming close to the Board's objective of 2.25 complaints per driver per year. Examination of each of our driver's records indicates that only one driver has had an above average number of complaints. This driver has been interviewed on this matter, and is aware of my concern and that he will be evaluated closely over the next few months.

It is the manager's opinion that the adopted objective is a very high standard. Comparisons with other systems that keep such data indicate that their expectations range from 3 to 5 complaints per driver per year. ECTA will continue to strive for the established objective, and the manager will personally see that steps necessary to do so are taken.

Safety - It is noteworthy that even with the increased snow and ice days, the vehicle accident rate so far this year is 18 percent lower than last year's. It is also notable that no accidents this year have involved bodily injury. The rate for ECTA is substantially better than rates reported for all systems--large and small--in Pennsylvania last year.

RECOMMENDED CORRECTIVE ACTIONS

Expenses - If the national and state economy continue as recent indicators suggest--that inflation may have finally been slowed--ECTA should experience some decline in expenses. Also, if current fuel prices remain as low as they have been since major decreases started in December, this alone could bring the Authority's rate of expense increase substantially below 10 percent.

One major area of cost that can be controlled by ECTA is maintenance and repairs. Action should be taken immediately to procure replacement vehicles for the four rural vans which, as explained above, now have a negative benefit/cost impact due to necessary major repairs and overhauls. These vehicles have reached the end of their useful life, and it is recommended that the Board authorize the manager to seek replacement vehicles immediately. Other potential actions that should be considered include:

1. Alter routes and schedules, as needed, to maximize service to the most productive areas and any new sources of ridership. Routes 3 and 6 have segments that are unproductive. Both will be rerouted and rescheduled to capitalize on the new shopping center and medical park which recently opened. If these adjustments are not productive, overall reductions in these routes will be made.

2. Maintain certain parts of promotional campaign used last year. The periodic co-advertisements which we ran in the local newspaper with the downtown and mall merchants were productive. We found through on-board

surveys that some new riders were attracted this year by the half-fare shopper's specials that were paid for by the merchant's promotional funds.

3. Increase average speed of revenue service by decreasing dwell time at stops, rerouting, increasing stop spacing and/or speeding fare collection. We have found that routes on Main Street have some stops spaced too closely together and that some speed can be gained by decreasing the number of stops. This route segment will be adjusted during the next month. We will also be working with the drivers on instructions to speed up fare collections and decrease dwell times at certain stops. This will be determined by on-board monitoring.

4. Decrease amount of deadheading. The rural route deviation service is our greatest source of deadhead mileage. These routes will be re-evaluated over the next two months to determine what routing changes can be made to decrease our deadhead mileage.

Service Quality - Two aspects of service quality need improvement: on-time performance and miles between road calls. To ensure that on-time performance is improved, if possible, the following actions will be taken:

1. Monitor drivers' on-road performance and correct.
2. Change dwell time at stops.
3. Reroute and/or reschedule vehicles if congested area or peak service appears to be problematic.
4. Reroute vehicles to eliminate excessive turns or indirect routings.
5. Increase speed of fare collection.
6. Increase stop spacing.

7. Enforce no parking at bus stops.

8. Improve reliability of vehicles.

9. Utilize two-way radio communications to monitor and assist drivers.

As noted in the preceding section, one of ECTA's primary improvement needs is to replace the four obsolete vans used for rural service. In addition to this action, the following corrective actions will also be taken to ensure that every possible effort is made to improve mileage between road calls:

1. Improve preventive maintenance system.

2. Improve routine maintenance and inspection procedures and/or staff or vendor capabilities.

3. Improve quality of vehicle repair work and repair staff or vendor capabilities.

To help ensure that the actions taken are effective, performance indicators will be monitored monthly through the end of the fiscal year or until it is apparent that the actions have succeeded. Status reports will be given to the Board at each regular monthly meeting and a year-end evaluation will be completed.

Appendix A

Glossary

The following data definitions are used throughout Chapter II of this Manual.

Avoidable Vehicle Accidents = accidents resulting from an infraction of either a motor vehicle law or a system policy by the transportation system's driver.

Complaints = complaints received by the transit system either verbally or in writing.

Elderly Passengers = In Pennsylvania, elderly passengers are persons 65 years and older.

Expenses

Administrative Expenses = those expense items attributable to administrative functions (excluding operating and capital purchase expenses; see page 21 for specific line items included in Administrative Expenses).

Dispatching Expenses - those expense items attributable to the function of dispatching of vehicles, such as the wages and fringes for a dispatcher, and dispatch radio maintenance and operating costs.

Fuel Expenses - expenses for the fuel consumed by revenue vehicles, and heating fuel consumed by a facility. In this manual, there are separate expense indicators for analyzing fuel consumed by revenue vehicles and that consumed by a facility. (See "Other Indicators" under expense category.)

Maintenance Expenses - those expense items attributable to the function of vehicle maintenance, such as the wages and fringes of maintenance staff; non-capitalized maintenance tools, equipment and replacement parts; and maintenance vendor charges.

Marketing Expenses - those expense items attributable to the function of marketing, such as the wages and fringes of staff allocated to marketing and promotion, the purchase of marketing materials, advertising or the services of a professional marketing firm.

Total Expenses - total cost of service attributable to administrative and operating expense (excludes capital purchase expenses).

Non-Vehicle Accidents = all accidents involving the transportation system which do not involve an in-service transit vehicle and are a public liability in nature.

Revenues

Fare-Paying Passenger Revenue = total revenue collected from fares and transfers, passes with regular fare value, and any partial fares paid through the farebox (revenue attributable to the Senior Citizens Reduced Fare and Free Transit Programs are excluded).

Passenger Revenue = total fare-paying passenger revenue plus revenue attributable to the Senior Citizens Reduced Fare and Free Transit Programs.

Total Revenue = total fare-paying passenger revenue, passenger revenue, and non-passenger revenue collected, excluding funds from Federal, State and local operating assistance grants and any other Federal grants.

Revenue Hours = total vehicle hours used in providing passenger transportation, excluding deadhead time.

Revenue Miles = total vehicle miles traveled in providing passenger transportation, excluding deadhead mileage. Fixed Route deadhead is mileage driven from the garage to the first bus stop on the route and from the last stop of the route back to the garage. Demand reponse deadhead is mileage driven from the last passenger's destination to the vehicle's stand, garage or headquarters.

Revenue Vehicle Accidents = accidents that involve an in-service transit vehicle and result in a minimum of $50 property damage and/or bodily injury.

Road Calls = occasions when a revenue vehicle has a breakdown on the road and must be towed or repaired at the site of the breakdown by maintenance staff or a maintenance vendor.

Stops on Time = stops that are 0 minutes early to 5 minutes late.

Subsidy = all government grants or funds obligated to and used by the system from local, State or Federal units of government. In Pennsylvania, Section 406 and Free Transit program grant revenues are not included as subsidy.

Total Passengers = count of boardings for a given time or distance of service, excluding transfers.

Vehicle Hours = total vehicle hours used in providing revenue service, including deadhead time.

Vehicle Miles = total mileage traveled by revenue vehicles for all revenue service, including deadhead mileage.

Appendix B

Comparative Performance Data

Sources and Uses of Comparative Data

The following sections contain values for most of the general and supplemental indicators presented in this report. The data was provided by state agencies for Fiscal 1980 or 1981. The Pennsylvania data is taken from fourth quarter invoices (ROA-3) for Fiscal 1981. The Indiana data is from the 1980 Annual Report: Indiana Public Transportation published by the State Planning Services Agency, Division of Public Transportation. The Michigan data is taken from the 1980-81 Comprehensive Transportation Fund Report of the Michigan Transportation Commission. The Iowa data is taken from work sheets provided by the Iowa Department of Transportation.

The data and performance measures included in this report are to illustrate the range of values found in practice. They do not represent standards, norms, or acceptable values. A wide range of system types and sizes is represented in the data. The user of the guide should attempt to identify the system or systems most like their own in order to allow for valid comparisons.

To assist in this identification process, brief descriptions of the Pennsylvania Systems are provided. The Michigan systems are all public-demand responsive systems based in small urban areas operating vans and small buses. The Iowa data represents two types of systems, the regional systems are rural and provide fixed route, public-demand responsive and specialized human service transportation. The other Iowa systems reported are small urban fixed route operations. The Indiana systems are small urban fixed route systems.

Name: Area Transportation Authority of North Central Pennsylvania
Service Area: Cameron, Clearfield, Elk, Potter, McKean, Jefferson Counties
Service Area Population: 245,254
Type of Service: Fixed route, fixed route with deviation
Type of Equipment: Vans, school buses, 2-Mercedes 309D diesel, transit buses
Number of Buses: Total--45 Peak--40
Number of Employees: Total--85 Drivers--65 Maintenance--0
Administrative--20
Top Wage of Drivers: $3.30/hr
Contracted Services: Fixed route operation in Clearfield Borough
Inter-urban fixed route operation
Fare Structure: $.40 in Clearfield; $.06/mile fixed route
$.12/mile demand responsive
Special Factors:

Name: Bucks County Office of Public Transportation
Service Area: All of Bucks County
Service Area Population: 479,211
Type of Service: Shared-ride public demand responsive
Type of Equipment: Cabs, vans, 16(b) 2 vehicles
Number of Buses: Total--3 Peak--3
Number of Employees: Total--2 Drivers--0 Maintenance--0 Administrative--2
Top Wage of Drivers:
Contracted Services: All services--private carriers
The Office of Public Transportation dispatches all services
Fare Structure: Zone based on type of service.
Special Factors:

Name: City of Butler

Service Area: Butler City and Butler Twp.

Service Area Population:

Type of Service: Fixed Route--5

Type of Equipment: 15-17 passenger minibus

Number of Buses: Total--3 Peak--2

Number of Employees: Total-- Drivers-- Maintenance-- Administrative--1

Top Wage of Drivers: $5.00/hr

Contracted Services: Contract all services with Butler Short Line, Inc.

Fare Structure: $.50

Special Factors: Not in operation 1981-82.

Name: Carbon County Rural Transportation System

Service Area: Carbon County

Service Area Population: 53,285

Type of Service: Fixed Route--1 route in Jim Thorpe; 3 between outlying towns to Jim Thorpe; demand responsive public

Type of Equipment: 15-24 passenger buses; vans, cabs, station wagons.

Number of Buses: Total--10 Peak--

Number of Employees: Total--3 Drivers--2 Maintenance--0 Administrative--1

Top Wage of Drivers: $3.58/hr

Contracted Services: Contract for most fixed route; demand response with taxi, contract maintenance

Fare Structure: $.25 fixed in town; $.50 between towns; $1.00 max.

Special Factors: demand response based on $1.00/mile cost

Name: Cambria County CART

Service Area: Rural Cambria County

Service Area Population: 85,908

Type of Service: Fixed route and demand responsive

Type of Equipment: Vans, 16 passenger buses, 3 lift-equipped vans

Number of Buses: Total--13 Peak--10

Number of Employees Total--15 Drivers--9 Maintenance--0 Administrative--6

Top Wage of Drivers: $4.15/hr

Contracted Services: Maintenance
Fixed route operations

Fare Structure: $.60-$2.25

Special Factors:

Name: Centre Area Transportation Authority

Service Area: State College, Bellefonte Borough, College, Ferguson, Harris, and Patton Twps.

Service Area Population: 60,000

Type of Service: Urban fixed route

Type of Equipment: 30-35 ft Diesel Transit Buses

Number of Buses: Total--24 Peak--19

Number of Employees: Total--42 Drivers--31 Maint.--5 Administrative--6

Top Wage of Drivers: $5.60/hr

Contracted Services: Accounting/Financial services provided by State College Borough

Fare Structure: $.50 cash fare; annual, term passes, multi-ride ticket

Special Factors: Unionized drivers, 80% riders Penn State Faculty and Students

Name: Crawford Area Transportation Authority

Service Area: Crawford County

Service Area Population: 88,869

Type of Service: Fixed route with deviation, Area Agency on Aging major source of ridership, urban and rural

Type of Equipment: vans, 20 passenger school buses, and school-bus type transit buses--all gas powered

Number of Buses/Vans: Total--12 Peak--10

Number of Employees: Total--14 Drivers--8 Maint.--1 Administrative--5

Top Wage of Drivers: $5.00/hr

Contracted Services: Meadville Service contracted to private taxi company. Contract for accounting services.

Fare Structure: $.50-$1.40

Special Factors:

Name: Cumberland County (CC Rider)

Service Area: Mt. Holly-Boiling Springs, Carlisle, Newville

Service Area Population: 20,000

Type of Service: Interurban Fixed Route

Type of Equipment: 41-49 passenger transit buses

Number of Buses: Total--2 Peak--2

Number of Employees: Total--4 Drivers--2 Maint.--1 Administrative--1

Top Wage of Drivers: $9.50/hr

Contracted Services: All services contracted to private bus operator

Fare Structure: $.50-$1.00

Special Factors: Vehicles provided by private carrier.

Name: DuBois, Falls Creek, Sandy Township Joint Transportation Authority (DuFAST)

Service Area: DuBois, Falls Creek, Sandy Township (Clearfield and Jefferson Counties)

Service Area Population: 16,742

Type of Service: Small urban fixed route

Type of Equipment: Mercedes 309D Diesel Buses, 19 passenger

Number of Buses: Total--3 Peak--2

Number of Employees: Total--8 Drivers--4 Maint.--2 Administrative--2

Top Wage of Drivers: $4.25

Contracted Services: None

Fare Structure: $.40, student fares

Special Factors: ATA provides demand responsive service in DuFAST service area.
Vehicles leased by DuFAST.

Name: Indiana County Transportation Authority

Service Area: Indiana County

Service Area Population: 90,000

Type of Service: Small urban fixed route, interurban fixed route, fixed route with deviation in rural areas

Type of Equipment: Vans, transit-type buses

Number of Buses: Total--16 Peak--10

Number of Employees: Total--18 Drivers--12 Maint.--1 Administrative--5

Top Wage of Drivers: $4.20/hr

Contracted Services: Borough of Indiana and interurban fixed routes contracted with private carriers.

Fare Structures: $.50 in town; $1.50 rural service.

Special Factors: Leasing 3 buses.

Name: County of Lebanon Transit

Service Area: Lebanon County

Service Area Population: 110,000

Type of Service: Fixed route--13 routes

Type of Equipment: Diesel Transit Buses, 45 passenger

Number of Buses: Total--11 Peak--8

Number of Employees: Total-- Drivers-- Maint.-- Administrative--3

Top Wage of Drivers: $4.50/hr

Contracted Services: Contract operations to Lebanon Bus Co.

Fare Structure: $.40-$.80.

Special Factors: Lease 7 buses from Capital Area Transit.

Name: Mid-County Transit Authority

Service Area: Kittanning-Ford City

Service Area Population:

Type of Service: Fixed route within Kittanning and Ford City
Contract human service

Type of Equipment: Mercedes Diesel--19

Number of Buses: Total--4 Peak--3

Number of Employees: Total--11 Drivers--6 Maint.--2 Administrative--3

Top Wage of Drivers:

Contracted Services: None

Fare Structure: $.50/zone

Special Factors:

Name: Monroe County Transportation Authority

Service Area: Monroe County

Service Area Population: 69,409

Type of Service: Small urban and interurban fixed route.

Type of Equipment: Diesel Transit buses, 30-35 ft.

Number of Buses: Total--6 Peak--4

Number of Employees: Total--9 Drivers--4 Maint.--2 Administrative--3

Top Wage of Drivers: $6.10/hr

Contracted Services: All operations and maintenance contracted. Authority has 3 employees.

Fare Structure: $.35/base; $.25/zone; $1.10/max. fare.

Special Factors: High average fleet age, lease payments on several buses.

Name: New Castle Area Transit Authority

Service Area: New Castle and surrounding townships.

Service Area Population: 39,499

Type of Service: Small urban fixed route

Type of Equipment: Diesel and Gas Transit Buses

Number of Buses: Total--13 Peak--10

Number of Employees: Total--27 Drivers--18 Maint.--4 Administrative--5

Top Wage of Drivers: $7.48/hr

Contracted Services: None.

Fare Structure: $.35

Special Factors: Twin Coach Buses experiencing extremely high maintenance expense and poor reliability.

Name: Shenango Valley Shuttle
Service Area: Sharon, Farrell, Wheatland, Sharpsville, Hermitage Twp.
Service Area Population: 56,646
Type of Service: Small urban fixed route.
Type of Equipment: School buses.
Number of Buses: Total--2 Peak--2
Number of Employees: Total--5 drivers--2 Maintenance--1 Administrative--2
Top Wage of Drivers: $5.00/hr
Contracted Services: All operations contracted to private bus company.
Fare Structure: $.35
Special Factors: Vehicles provided by contractor.

Name: Warren County Transit Authority
Service Area: Pleasant Twp., Conewango Twp., Warren Borough
Service Area Population:
Type of Service: Fixed route--2 routes
Type of Equipment: Transliner 800--21 passenger
Number of Buses: Total--3 Peak--2
Number of Employees: Total--3 Drivers-- Maint.-- Administrative--3
Top Wage of Drivers: $4.75/hr
Contracted Services: Contract for operations and maintenance.
Fare Structure: $.50 cash fare
Special Factors:

Name: Westmoreland County Transportation Authority
Service Area: Central Westmoreland County--16 municipalities
Service Area Population: 33,700 rural 206,700 urban
Type of Service: Fixed routes
Type of Equipment: 2--Superior Transliner, School bus type vehicles
Number of Buses: Total--9 Peak--9 Leased
Number of Employees: Total-- Drivers-- Maint.-- Administration--1
Top Wage of Drivers: $7.80
Contracted Services: All operations contracted.
Fare Structure: $.50-$3.30 urban $.45-$1.30 rural
Special Factors

FINANCIAL INDICATORS PA TRANSIT SYSTEMS--1981

City	(1) Total Expense/ Vehicle; Mile	(2) Total Expense/ Vehicle Hour	(3) Total Expense/ Passenger	(4) Total Expense/ Rev. Mile	(20) Advert. Exp./ Total Expense	(25) Revenue Mile/ Vehicle Mile
ATA	$1.49	.	$3.25	$1.56	0.006	0.938
BUCKS	$0.69	$8.42	$4.64	$0.69	0.000	0.989
BUTLER	$1.33	$19.22	$1.31	$1.33	0.003	1.000
CAMBRIA	$1.19	$16.93	$4.06	$1.19	0.024	1.000
CARBON	$0.94	$12.73	$2.11	$0.96	0.001	0.981
CENTRE	$1.62	$21.71	$0.63	$1.69	0.009	0.954
CRAWFORD	$1.43	$24.32	$3.77	$1.45	0.017	0.988
CUMBERLA	$1.12	$26.04	$3.43	$1.12	0.048	1.000
DUBOIS	$1.59	$20.60	$1.28	$1.63	0.005	0.979
INDIANA	$1.51	$26.81	$3.45	$1.51	0.040	1.000
LEBANON	$1.63	$22.65	$1.24	$1.84	0.016	0.993
MID_COUN	$1.55	$21.91	$1.93	$1.58	0.007	0.983
MONROE	$1.26	$11.75	$1.24	$1.32	0.003	0.952
NEW_CAST	$2.19	$23.03	$1.04	$2.25	0.000	0.971
SHARON	$1.38	$23.96	$1.08	$1.43	0.014	0.964
WARREN	$1.24	$20.44	$4.13	$1.27	0.013	0.972
WESTMORE	$1.43	$25.53	$3.00	$1.45	0.002	0.966

REVENUE INDICATORS PA TRANSIT SYSTEMS--1981

City	Total Rev./ Total Hr R33	Total Rev./ Rev. Mile R34	Total Rev./ Total Psgr. R35	Pass. Rev./ Rev. Mile R36	Pass. Rev./ Total Hr. R37	Pass. Rev./ Total Psgr. R38	Pass. Rev./ Total Exp. R39	Fare Pass. Rev./ Total Revenue R40	Pass. Rev./ Total Rev. R41
ATA	.	$0.40	$0.83	$0.36	.	$0.74	0.229	0.264	0.897
BUCKS	$0.91	$0.07	$0.50	$0.07	$0.91	$0.50	0.108	1.000	1.000
BUTLER	$6.51	$0.45	$0.44	$0.45	$6.51	$0.44	0.339	0.578	1.000
CAMBRIA	$4.58	$0.32	$1.10	$0.29	$4.09	$0.98	0.242	0.704	0.894
CARBON	$4.10	$0.31	$0.68	$0.31	$4.08	$0.67	0.320	0.333	0.994
CENTRE	$11.39	$0.89	$0.33	$0.88	$11.25	$0.33	0.518	0.961	0.986
CRAWFORD	$4.46	$0.27	$0.09	$0.24	$4.10	$0.64	0.168	0.170	0.915
CUMBERLA	$3.89	$0.16	$0.48	$0.16	$3.89	$0.48	0.139	0.966	1.000
DUBOIS	$6.03	$0.48	$0.37	$0.46	$5.83	$0.36	0.283	0.516	0.966
INDIANA	$5.01	$0.26	$0.65	$0.28	$5.01	$0.65	0.167	0.658	1.000
LEBANON	$7.29	$0.59	$0.40	$0.57	$6.99	$0.38	0.309	0.560	0.959
MID_COUN	$5.84	$0.42	$0.52	$0.37	$5.17	$0.46	0.236	0.598	0.886
MONROE	$3.43	$0.39	$0.36	$0.36	$3.24	$0.34	0.276	0.770	0.945
NEW_CAST	$6.64	$0.65	$0.30	$0.61	$6.28	$0.28	0.273	0.693	0.946
SHARON	$5.99	$0.36	$0.27	$0.36	$5.96	$0.27	0.249	0.525	0.995
WARREN	$2.10	$0.13	$0.42	$0.13	$2.04	$0.41	0.100	0.676	0.971
WESTMORE	$7.67	$0.45	$0.90	$0.39	$6.80	$0.80	0.206	0.770	0.886

Source: ROA-3 Invoice Rural Operating Assistance, Pa. Department of Transportation Fiscal 1981.

SUBSIDY INDICATORS PA TRANSIT SYSTEMS--1981

City	Ratio Rev./Exp. (42)	Subsidy/ Mile (43)	Subsidy/ Hour (44)	Subsidy/ Passenger (45)
ATA	0.255	$1.10	.	$2.39
BUCKS	0.108	$0.61	$7.51	$4.14
BUTLER	0.339	$0.69	$9.97	$0.68
CAMBRIA	0.271	$0.87	$12.35	$2.96
CARBON	0.322	$0.01	$8.30	$1.37
CENTRE	0.524	$0.76	$10.17	$0.30
CRAWFORD	0.184	$1.17	$19.84	$3.08
CUMBERLA	0.139	$0.96	$24.02	$2.94
DUBOIS	0.293	$0.92	$11.85	$0.73
INDIANA	0.187	$1.17	$20.71	$2.66
LEBANON	0.322	$1.05	$12.94	$0.71
MID_COUN	0.266	$1.02	$14.39	$1.27
MONROE	0.292	$0.83	$7.72	$0.81
NEW_CAST	0.288	$1.40	$14.71	$0.67
SHARON	0.250	$0.87	$15.16	$0.69
WARREN	0.103	$1.07	$17.72	$3.58
WESTMORE	0.300	$0.95	$16.97	$1.99

NON-FINANCIAL INDICATORS PA TRANSIT SYSTEMS--1981

City	Total Psgr./ Veh. Mile (46)	Total Psgr./ Veh. Hour (47)	Fare Paying Psgr./Total Psgr. (48)	Elderly Psgr./ Total Psgr. (49)
ATA	0.458	.	0.329	0.074
BUCKS	0.148	1.816	1.000	0.000
BUTLER	1.016	14.69	0.573	0.427
CAMBRIA	0.293	4.167	0.828	0.000
CARBON	0.446	6.047	0.431	0.269
CENTRE	2.546	34.26	0.974	0.026
CRAWFORD	0.360	6.445	0.242	0.042
CUMBERLA	0.326	8.173	0.899	0.101
DUBOIS	1.249	16.15	0.419	0.581
INDIANA	0.438	7.772	0.616	0.286
LEBANON	1.476	18.3	0.564	0.391
MID_COUN	0.803	11.32	0.602	0.398
MONROE	1.018	9.504	0.752	0.248
NEW_CAST	2.092	22.05	0.667	0.333
SHARON	1.274	22.12	0.382	0.618
WARREN	0.299	4.947	0.616	0.384
WESTMORE	0.478	8.523	0.819	0.181

LEVEL OF SERVICE INDICATORS PA TRANSIT SYSTEMS--1981

	(55) Speed	(56) Miles	(57) Hours
ATA	.	719,232	.
BUCKS	12.2599	30,380	2,478
BUTLER	14.4304	72,729	5,040
CAMBRIA	14.2084	198,036	13,938
CARBON	13.5536	187,853	13,860
CENTRE	13.4446	576,006	42,843
CRAWFORD	16.9646	191,106	11,265
CUMBERLA ND	25.0594	94,925	3,788
DUBOIS	12.9310	86,896	6,720
INDIANA	17.7476	171,923	9,687
LEBANON	12.3801	223,046	18,065
MID_COUN	14.1084	122,058	8,694
MONROE	9.3379	242,692	25,990
NEW_CAST	10.3386	318,378	30,210
SHARON	17.3609	71,770	4,134
WARREN	16.3235	90,235	5,461
WESTMORE	17.8332	105,715	5,928

INDIANA TRANSIT SYSTEMS

FINANCIAL INDICATORS INDIANA TRANSIT SYSTEMS 1980

City	(1) Total Expense/ Total Veh.Mile	(2) Total Expense/ Total Veh. Hour	(3) Total Expense/ Passenger	(4) Total Expense/ Revenue Mile
ANDERSON	2.002	.	1.989	2.068
BLOOMING	0.964	.	0.816	0.992
COLUMBUS	0.525	.	0.943	0.535
EVANSVIL	0.972	13.93	0.514	0.958
LAFAYETT	1.924	25.94	1.281	1.951
LAPORTE	.	14.61	1.311	0.735
MARION	1.127	13.03	1.196	1.136
MICHCITY	1.160	.	1.744	.
RICHMOND	0.716	.	0.900	0.716
TERREHTE	1.156	13.33	10.25	1.165
WASHINGT	0.608	7.910	0.817	.

REVENUE INDICATORS INDIANA TRANSIT SYSTEMS 1980

City	(33) Total Revenue/ Vehicle Hour	(34) Total Revenue/ Revenue Mile	(38) Revenue/ Passenger
ANDERSON	.	0.221710	0.213
BLOOMING	.	0.236523	0.195
COLUMBUS	.	0.079011	0.139
EVANSVIL	5.000	0.404015	0.217
LAFAYETT	3.005	0.277081	0.182
LAPORTE	5.705	0.289692	0.517
MARION	1.712	0.149323	0.157
MICHCITY	.	.	0.143
RICHMOND	.	0.385055	0.484
TERREHTE	2.717	0.241511	2.090
WASHINGT	0.750	.	0.078

SUBSIDY INDICATORS INDIANA TRANSIT SYSTEMS 1980

City	(42) Total Revenue/ Total Expense	(43) Subsidy/ Mile	(44) Subsidy/ Hour	(45) Subsidy/ Passenger
ANDERSON	0.107	1.788	.	$1.78
BLOOMING	0.238	0.734	.	$0.62
COLUMBUS	0.148	0.447	.	$0.80
EVANSVIL	0.422	0.501	$6.05	$0.30
LAFAYETT	0.142	1.051	$22.26	$1.10
LAPORTE	0.395	.	$8.85	$0.79
MARION	0.131	0.979	$11.32	$1.04
MICHCITY	0.062	1.065	.	$1.60
RICHMOND	0.539	0.331	.	$0.42
TERREHTE	0.204	0.920	$10.61	$0.16
WASHINGT	0.096	0.550	$7.15	$0.74

Source: 1980 Annual Report: Indiana Public Transportation, State Planning Services Agency, Division of Public Transportation, Indianapolis, IN.

NON-FINANCIAL INDICATORS INDIANA TRANSIT SYSTEMS 1980

City	(46) Passenger/ Mile	(47) Passenger/ Hour
ANDERSON	1.01	.
BLOOMING	1.16	.
COLUMBUS	0.56	.
EVANSVIL	1.69	27.10
LAFAYETT	1.50	20.25
LAPORTE	.	11.15
MARION	0.94	10.69
MICHCITY	0.67	.
RICHMOND	0.80	.
TERREHTE	0.11	1.30
WASHINGT	0.74	9.66

LEVEL OF SERVICE INDICATORS INDIANA TRANSIT SYSTEMS 1980

City	(55) Avg. Speed	Total Veh. Mi.	Total Veh. Hours
ANDERSON	.	470,622	.
BLOOMING	.	450,538	.
COLUMBUS	.	240,000	.
EVANSVIL	14.33	847,484	59,130
LAFAYETT	13.46	567,394	43,568
LAPORTE	.	.	10,660
MARION	11.50	165,000	14,276
MICHCITY	.	154,000	.
RICHMOND	.	377,696	.
TERREHTE	11.53	639,075	55,412
WASHINGT	13.00	25,480	1,960

OPERATING CHARACTERISTICS OF INDIANA TRANSIT SYSTEMS 1980

City	Type*	Population	Cash Fare	Number Employees
ANDERSON	1	64,421	0.30	46
BLOOMING	1	51,867	0.50	27
COLUMBUS	2	30,331	0.25	17
EVANSVIL	1	129,667	0.35	46
LAFAYETT	1	64,084	0.35	45
LAPORTE	2	21,781	0.35	34
MARION	1	35,833	0.30	15
MICHCITY	1	33,000	0.50	17
RICHMOND	1	41,281	0.50	18
TERREHTE	1	61,020	0.30	38
WASHINGT	1	11,300	0.35	4

*Type: 1 = Fixed Route; 2 = Demand Responsive.

FINANCIAL INDICATORS FOR MICHIAN DEMAND RESPONSIVE SYSTEMS--1981

City	Tot. Ex./ Veh.Mi. (R1)	Tot. Ex./ Psgr. (R3)	Tot.Rev./ Rev.Mi. (R34)	Tot.Rev./ Tot.Psgr. (R35)	Psgr.Rev. Rev.Mi. (R36)	Psgr.Rev./ Tot.Psgr. (R38)	Psgr.Rev./ Exp. (R39)	Psgr.Rev./ Tot.Rev. (R41)	Tot.Rev./ Tot.Exp. (R42)	Subsidy/ Mile (R43)	Subsidy/ Psgr. (R45)
ADRIAN	$0.79	$1.28	$0.21	$0.34	$0.21	$0.34	$0.27	$1.00	$0.27	$0.58	$0.94
ALMA	$2.20	$2.85	$0.72	$0.93	$0.30	$0.47	$0.16	$0.50	$0.33	$2.80	$3.62
ALPENA	$1.25	$2.22	$0.27	$0.40	$0.26	$0.47	$0.21	$0.97	$0.22	$1.14	$2.03
ANTRIM_C	$0.62	$3.69	$0.14	$0.90	$0.14	$0.90	$0.23	$1.00	$0.23	$0.49	$3.09
BARAGA_C	$0.85	$3.10	$0.10	$0.30	$0.10	$0.30	$0.12	$1.00	$0.12	$0.75	$2.74
BELDING	$1.49	$1.25	$0.34	$0.29	$0.34	$0.29	$0.23	$1.00	$0.23	$1.90	$1.61
BIG_RAPI	$1.35	$1.72	$0.25	$0.36	$0.25	$0.32	$0.19	$0.99	$0.19	$1.09	$1.38
CADILLAC	$1.05	$1.72	$0.23	$0.37	$0.18	$0.30	$0.15	$0.81	$0.22	$1.15	$1.88
CRAWFORD	$1.04	$3.56	$0.28	$0.95	$0.17	$0.58	$0.16	$0.61	$0.27	$1.10	$3.75
DAVIDSON	$1.07	$1.75	$0.21	$0.34	$0.21	$0.33	$0.19	$0.98	$0.19	$0.96	$1.56
DOWAGIAC	$1.39	$2.19	$0.25	$0.39	$0.20	$0.31	$0.14	$0.81	$0.18	$2.40	$3.79
EATON_RA	$1.16	$2.64	$0.16	$0.36	$0.16	$0.35	$0.14	$1.00	$0.14	$1.03	$2.35
EDPTA	$2.67	$1.90	$1.16	$0.82	$1.16	$0.82	$0.43	$1.00	$0.43	$1.54	$1.09
GLADWIN	$0.87	$1.17	$0.37	$0.49	$0.20	$0.27	$0.23	$0.56	$0.42	$1.08	$1.45
GOGEBIC_	$1.45	$1.96	$0.23	$0.31	$0.14	$0.18	$0.09	$0.60	$0.16	$1.22	$1.65
HILLSDAL	$1.04	$1.62	$0.22	$0.35	$0.22	$0.35	$0.22	$1.00	$0.22	$0.82	$1.28
HOLLAND	$1.13	$2.36	$0.21	$0.43	$0.17	$0.36	$0.15	$0.85	$0.18	$1.07	$2.23
HOUGHTON	$0.96	$2.11	$0.27	$0.59	$0.23	$0.53	$0.25	$0.93	$0.28	$0.60	$1.33
ISABELLA	$1.45	$3.91	$0.18	$0.48	$0.15	$0.41	$0.10	$0.85	$0.12	$1.25	$3.38
ISHPEMIN	$1.49	$3.44	$0.28	$0.64	$0.27	$0.63	$0.13	$0.98	$0.19	$1.04	$2.41
LENAWEE_	$0.71	$2.81	$0.18	$0.71	$0.17	$0.68	$0.24	$0.96	$0.25	$0.86	$3.40
LUDINGTO	$2.07	$2.98	$0.31	$0.44	$0.28	$0.41	$0.14	$0.92	$0.15	$2.11	$3.04
MANISTEE	$0.96	$3.18	$0.16	$0.54	$0.14	$0.47	$0.15	$0.86	$0.17	$0.79	$2.61
MARQUETT	$1.50	$1.18	$0.67	$0.53	$0.44	$0.34	$0.29	$0.65	$0.45	$1.10	$0.86
MARSHALL	$1.21	$1.93	$0.26	$0.41	$0.22	$0.35	$0.18	$0.86	$0.21	$1.33	$2.12
MCOSTA_	$0.73	$4.16	$0.18	$1.04	$0.18	$1.04	$0.25	$1.00	$0.25	$0.62	$3.57
NILES	$1.26	$2.41	$0.19	$0.37	$0.19	$0.36	$0.15	$0.98	$0.15	$1.07	$2.05
SS_MARIE	$1.13	$2.42	$0.17	$0.37	$0.17	$0.37	$0.15	$0.99	$0.15	$0.57	$1.23
TRAVERSE	$1.04	$2.60	$0.22	$0.56	$0.13	$0.33	$0.13	$0.58	$0.22	$1.24	$3.10
VAN_BURE	$0.71	$3.70	$0.16	$0.82	$0.16	$0.82	$0.22	$1.00	$0.22	$0.26	$1.35
YATES_TW	$1.12	$2.60	$0.22	$0.56	$0.22	$0.55	$0.19	$0.99	$0.19	$1.04	$2.66

NON-FINANCIAL INDICATORS--MICHIGAN DEMAND RESPONSIVE SYSTEMS--1981

	Psgr/ Mile (46)	Vehicle Miles	Total Psgr	Service Area Population
ADRIAN	0.612	201,073	122,969	20,382
ALMA	0.773	92,552	71,551	9,790
ALPENA	0.561	180,574	90,124	19,805
ANTRIM_C	0.150	605,530	90,496	12,612
BARAGA_C	0.275	200,753	55,237	7,789
BELDING	1.179	36,145	42,633	5,121
BIG_RAPI	0.784	198,096	155,336	11,995
CADILLAC	0.610	205,940	125,696	10,490
CRAWFORD	0.293	257,971	75,701	6,462
DAVISON	0.615	124,415	76,539	5,259
DOWAGIAC	0.634	46,433	29,420	6,583
EATON_RA	0.440	59,765	26,335	4,494
EDPTA	1.407	358,074	505,064	24,065
GLADWIN	0.742	54,632	40,674	.
GOGEBIC_	0.739	15,450	11,414	.
HILLSDAL	0.641	137,944	88,432	7,728
HOLLAND	0.480	242,095	116,311	27,137
HOUGHTON	0.455	340,194	154,857	34,652
ISABELLA	0.370	729,388	269,995	44,594
ISHPEMIN	0.433	76,865	33,295	.
LENAWEE_	0.253	193,237	48,849	81,569
LUDINGTO	0.694	146,450	101,569	9,521
MANISTEE	0.301	522,923	157,016	20,094
MARQUETT	1.274	116,312	148,172	.
MARSHALL	0.627	87,216	54,650	7,253
MECOSTA_	0.174	382,861	66,674	15,997
NILES	0.523	223,812	117,045	7,283
SS_MARIE	0.466	188,036	87,587	15,136
TRAVERSE	0.399	285,677	114,046	20,011
VAN_BURE	0.193	243,844	46,987	56,173
YATES_TW	0.392	91,720	35,997	1,963

GENERAL CHARACTERISTICS OF IOWA SMALL URBAN TRANSIT SYSTEMS--1981

CITY	TYPE*	VEHICLE MILES	VEHICLE HOURS	OPERATING EXPENSE	REVENUE	PEAK VEHICLES
BETTENDO	1	152,826	7,316	.	.	3
BETTENDO	2	38,404	3,498	.	.	1
BURLINGT	1	315,550	28,297	$544,472	$103,647	10
CORALVIL	1	198,979	10,122	$378,375	$152,749	6
IOWA_CIT	1	743,291	33,242	$1,490,767	$673,369	16
MARSHALL	1	70,226	3,383	$119,157	$20,185	2
MASON_CI	1	116,033	8,439	$92,041	$30,226	3
MUSCATIN	2	61,159	3,431	.	.	3
MUSCATIN	1	45,067	3,217	.	.	4

EXPENSE INDICATOS FOR IOWA SMALL URBAN TRANSIT SYSTEMS--1981

CITY	(1) Expense/ Veh. Mi.	(2) Expense/ Veh. Hr.	(3) Expense/ Exp. Psgr.	(4) Expense/ Rev. Mi.	(5) Expense/ Rev. Hr.
BETTENDO	.	.	.	.	.
BETTENDO	.	.	.	.	.
BURLINGT	$1.73	$19.24	$1.05	$1.96	$19.67
CORALVIL	$1.90	$23.47	$0.79	$2.04	$24.44
IOWA_CIT	$2.01	$22.35	$0.57	$2.06	$23.35
MARSHALL	$1.70	$22.14	$2.12	$1.73	$22.88
MASON_CI	$0.79	$10.91	$1.39	.	.
MUSCATIN	.	.	.	.	.
MUSCATIN	.	.	.	.	.

REVENUE INDICATORS--IOWA SMALL URBAN TRANSIT SYSTEMS--1981

CITY	(33) Revenue/ Hour	(34) Revenue/ Mile	(35) Revenue/ Psgr.
BETTENDO	.	.	.
BETTENDO	.	.	.
BURLINGT	$3.76	$0.36	$0.20
CORALVIL	$9.07	$0.82	$0.32
IOWA_CIT	$10.35	$0.93	$0.26
MARSHALL	$3.66	$0.29	$0.36
MASON_CI	.	.	$0.45
MUSCATIN	.	.	.
MUSCATIN	.	.	.

*1 = Fixed Route; 2 = Demand Responsive.

SUBSIDY INDICATORS IOWA SMALL URBAN TRANSIT SYSTEMS--1981

CITY	(42) Operating Ratio	(43) Subsidy/ Mile	(44) Subsidy/ Hour	(45) Subsidy/ Psgr.
BETTENDO	.	.	.	.
BETTENDO	.	.	.	.
BURLINGT	0.19	$1.40	$15.38	$0.85
CORALVIL	0.40	$1.13	$13.99	$0.47
IOWA_CIT	0.45	$1.10	$12.53	$0.31
MARSHALL	0.17	$1.41	$16.39	$1.76
MASON_CI	0.33	$0.53	$7.32	$0.93
MUSCATIN	.	.	.	.
MUSCATIN	.	.	.	.

NON-FINANCIAL INDICATORS IOWA SMALL URBAN TRANSIT SYSTEMS--1981

CITY	(46) Psgr./ Veh. Mi.	(47) Psgr./ Veh. Hr.	(54) Miles Road Call	(55) Speed	(58) Miles/ Accidents
BETTENDO	0.42	7.30	34,275	17.30	34,275
BETTENDO	0.33	5.37	22,101	16.30	29,400
BURLINGT	1.04	15.30	12,622	10.04	12,137
CORALVIL	2.41	29.70	4,422	12.00	49,745
IOWA_CIT	3.34	40.32	8,093	11.34	16,129
MARSHALL	0.80	10.46	1,277	13.20	35,113
MASON_CI	0.37	7.07	19,439	.	58,317
MUSCATIN	0.45	4.20	7,045	10.02	20,366
MUSCATIN	3.66	5.73	.	10.65	45,067

REVENUE INDICATORS--IOWA REGIONAL TRANSIT SYSTEMS--1981

System	(33) Revenue/ Hour	(34) Revenue/ Hour	(35) Revenue/ Psgr.
REGION1	.	$0.45	$1.44
REGION2	.	.	$0.79
REGION3	.	.	$1.81
REGION4	$3.19	$0.27	$0.94
REGION5	.	.	$1.65
REGION6	.	.	$0.11
REGION7	.	.	$24.68
REGION8	.	.	.
REGION8	.	.	$3.47
REGION9	.	.	$2.22
REGION10	$5.90	$0.43	$0.91
REGION11	.	.	$1.75
REGION12	.	.	$0.70
REGION13	.	.	$1.20
REGION14	.	.	$1.13
REGION15	$7.62	$0.50	$1.48
REGION16	$10.10	$0.89	$2.70

SUBSIDY INDICATORS IOWA REGIONAL TRANSIT SYSTEMS--1981

System	(42) Operating Ratio	(43) Subsidy/ Mile	(44) Subsidy/ Hour	(45) Subsidy/ Psgr.
REGION1	0.67	$0.19	$3.78	$0.70
REGION2	0.47	$0.35	$1.21	$0.67
REGION3	0.87	$0.11	$1.74	$0.28
REGION4	0.39	$0.35	$4.89	$1.48
REGION5	0.48	$0.67	$6.88	$1.78
REGION6	0.03	$0.51	$13.72	$3.95
REGION7	0.47	$5.39	$69.30	$27.08
REGION8	.	.	.	.
REGION8	0.69	$0.53	$5.42	$1.52
REGION9	0.47	$0.76	$9.98	$2.34
REGION10	0.50	$0.41	$5.69	$0.90
REGION11	0.72	$0.24	$3.06	$0.67
REGION12	0.43	$0.31	$3.22	$0.91
REGION13	0.25	$0.08	$13.17	$3.02
REGION14	0.04	$0.30	$4.71	$0.64
REGION15	0.77	$0.14	$2.23	$0.44
REGION16	0.67	$0.11	$1.60	$0.39

NON-FINANCIAL INDICATORS IOWA REGIONAL TRANSIT SYSTEMS--1981

System	(46) Psgr./ Mile	(47) Psgr./ Hour	(54) Miles/ Road Call	(55) Speed	(58) Miles/ Accident
REGION1	0.27	5.41	106,870	.	534,378
REGION2	0.41	1.39	.	.	.
REGION3	0.40	6.21	21,726	.	123,113
REGION4	0.24	3.30	.	11.70	156,571
REGION5	0.48	3.80	19,412	.	21,354
REGION6	0.13	3.48	109,341	.	.
REGION7	0.19	2.49	.	.	.
REGION8	0.34	3.61	13,099	.	.
REGION9	0.35	3.50	.	.	.
REGION9	0.30	3.93	76,276	.	30,510
REGION10	0.40	6.32	10,696	13.80	55,569
REGION11	0.35	4.50	25,903	.	94,978
REGION12	0.56	3.54	12,761	.	.
REGION13	0.24	3.54	.	.	.
REGION14	0.47	7.35	16,715	.	37,145
REGION15	0.31	5.11	325,836	15.57	130,334
REGION16	0.29	4.30	.	18.07	60,826

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